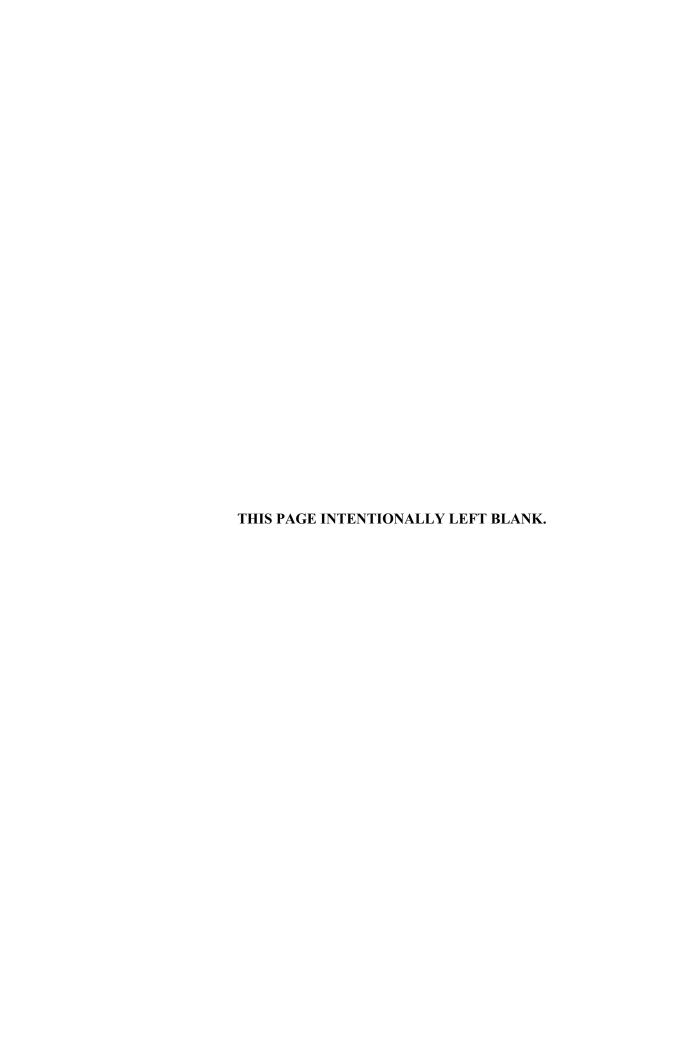
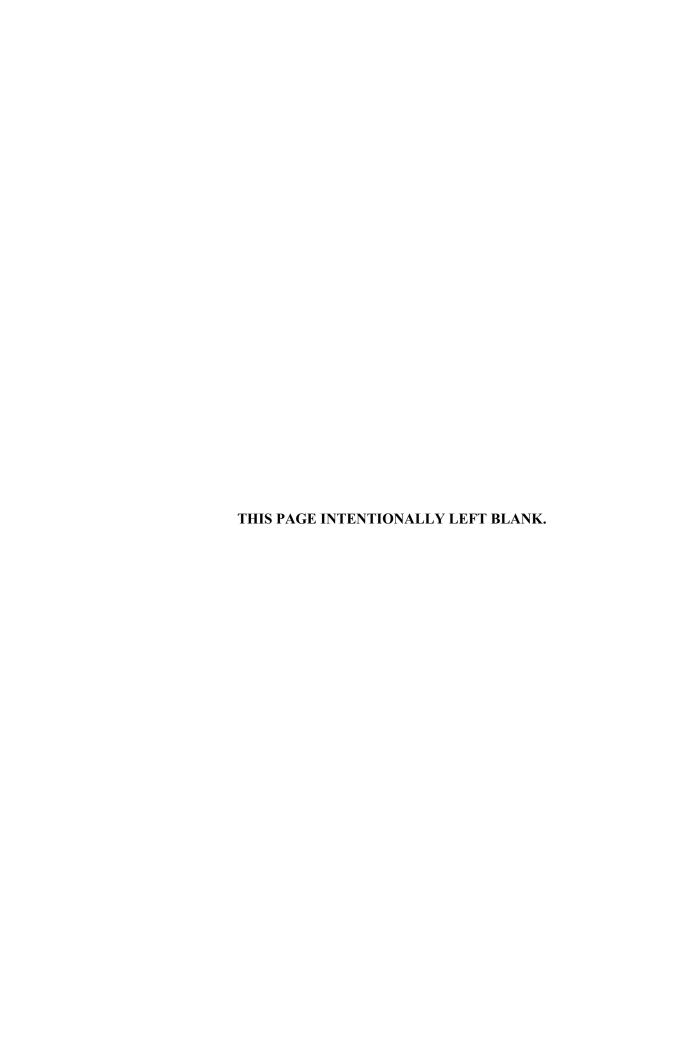
APPENDIX A

Field Sampling Logs

Discrete Surface Soil Samples
Soil Boring Samples
Surface Water and Sediment Samples
August 2012 Sampling







TRW [ווםר	ING I	OG	DIS	TRICT			BOREHOLE NUMBER
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WATER LEVEL MAKEMODEL WATER LEVEL SERIAL#: NA ELEVATION DEPTH USCS CLASSIFICATION OF MATERIALS SPIDATA (0.5 Feel) (PPMCPM) (Sample IDs/Dephis/Core I (0-0.75) Fig. 5/LT + 5AND (1.5 Feel) (PPMCPM) (Sample IDs/Dephis/Core I SANCK; PARICK; P	WATER LEVEL MAKEMODEL UP REMARKS SPT DATA (0.5 Feet) MONITORING (REMARKS (Sample IDSDephalocare (PPMCPM) WATER LEVEL MAKEMODEL UP REMARKS (0.5 Feet) MONITORING (REMARKS (Sample IDSDephalocare (PPMCPM) WATER LEVEL SERIAL! MONITORING (REMARKS (Sample IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL! MONITORING (REMARKS (Sample IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL! MONITORING (REMARKS (Sample IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL! MONITORING (REMARKS (Sample IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL! MONITORING (REMARKS (Sample IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL! MONITORING (REMARKS (Sample IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL! MONITORING (REMARKS (SAMPLE IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL! MONITORING (REMARKS (SAMPLE IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL! MONITORING (REMARKS (SAMPLE IDSDephalocare (O.5 Feet) WATER LEVEL SERIAL!	5. NAME OF DRILLER AMA	NOA TRONTON/SARA	HISE 6. DIRECTION OF BOR	EHOLE 🔽	VERTICAL	INCLINED DI
ELEVATION DEPTH (Feet) USCS CLASSIFICATION OF MATERIALS SPT DATA (0.5 Feet) (0.75) TILL SILT + SAND MATTRIX WI GRAVEL, PARCELIPABRACE TILL (0.75'-1.0) SCINCY SILT; THE CLAY, CAN; MICHAN (0.75'-1.0) SCINCY SILT; (0.75'-1.0) SCINCY	COMMENTS/SKETCH Classification of materials CLASSIFICATION OF MATERIALS CLASSIFICATION OF MATERIALS SPI DATA (0.5 Feet) (0.75 FILL SILT + SAND MATTERY WI GRANTEL, PRILLE, PRILLE, PRILLE COLUMN FRE O-I ON 04/18 C 1430 FIRE O-I ON 04/18 C 1430 FIRE O-I ON 04/18 C 1430 FIRE O-I ON 04/18 O	. 10 1111 11 10 10 10 10 10 10 10 10 10 1		•			
(0.75) FILL SILT+SAND MATRIX W GRANCE, BALCK, PEAKALEL MA SLAG + METAL 10484/3 BROWN DRY; COOSE (0.75'-1.0) Sandy SILT; MATRIX Clay, chr., midum Shef law susheim layells brown; 10484/6 yellwish brown 1 little layel/2 dall grayish brown SOCING TOEMINGTED AT 1.0 FT BOS BALLETIN M BOUTWITTE CHIES + HYDRATO	(0.75'-1.0') Sandy SIT; THE CLAY CAN: MATTER CONTROL OF THE CONTR		· · · · · · · · · · · · · · · · · · ·				
1 (0.75) FILL. SILT+ SAND MATRIX WI GRANEL, BRICK, PERSONNAL COLUMNO FRO SLAG + METAL 104R4/3 BROW DRY; LOOSE 10.75! -1.0) Sandy Silt; MATRIX Clay, dry; midum Shef, low glasheim, 104R4/3 brown; 104R4/3 brown 1 11111 104R4/12 dale granish brown BYEING TEEMINGTON AT 1.0 FT BUS BALKTILL WI BOUTOUTE CHIRS + HYGRATE	10-0.75) FILL SILT+SAND MATTELY WI GRANTI PARKAGENERAL MA SLAG + METAL 104R4/3 BROWN DRY; COOSE THE METAL 104R4/3 BROWN DRY; COOSE 1430 FOR THE METALS, PARKS PATHS + OXADS 1 HOW DUSKEIN, WHRYS 1 DYRY/S AND AUGUS BRUCIUS WILLIAMS BROWN BUTTON 104R4/3 BROWN BUTTON 104R4/3 BROWN BUTTON A TOO FROM BRUCIUS WILLIAMS A 3" SS HAND AUGUS COMMENTS/SKETCH DITCH MODELS DITCH MODELS DITCH MODELS DITCH MODELS MAND AUGUS DITCH MODELS MODELS MAND AUGUS DITCH MODELS MODE		USCS CLASSIFICA	TION OF MATERIALS			
		0.75	DRY, LOOSE (0.75'-1.0) M. trace Clay, Shef, low pla brown; 1041846 11H11 10418412 de BRUCTIU M	Soundy Silt; dry; midum strein; lovells yellowsh brown are grayish brown men AT 1.0 FT B Boutouite CHIPS +	HY GRANCE	MA	LL1155-074-5 COLUCTOR FAC 0-1 ON 04/12 0 1430 FOZ
Ι΄ Γροφο	the control of the second control of the control of	x X UHSS-079	ORDSY, Song GRANSE, FREELS				
- FIRCHARD	X GRASSY, Sunc SIRMUR FRIELS	DOD -					
CRASSY, SONC CRASSY, SONC X DHISS-074 Penphia	CRASSY, SOME SPENSELS WHISS-074 Pomphil	FOI COIRT CITIES		ONIOC SICNATURE/DATE			BOREHOLE NUMBER
X GRASSY SINC CRASSY SINC LIMSS 074	CONTCHT GRASSISSING CONTCHT AND FREEDS CONTCH	1 1 1	lant milialia	OS PULL II.	\cap		

		DISTRICT			BOREHOLE NUMBER
HTRW DRILLING	LOG	USACE - Louisville			LUISS-075
1. COMPANY NAME		2. DRILLING SUBCONTRACTO)Ř		DC7.00
SAIC		NA			SHEET 1 OF 1
3. PROJECT RUAAP	PBA 08 RI			te Route 5 R	avenna, OH 44266
S. NAME OF DRILLER AMANOA	TROUTON/SARA HIS	6. DIRECTION OF BORE	HOLE V	VERTICAL	INCLINED DEGREE
7. NOTES PID MAKE/MODEL: NA	^	PID SERIAL#: AFF		Colors from	Munsell Soil Color Chart, Rev
WATER LEVEL MAKE/MOD	10	WATER LEVEL SERIAL#	1		8000 Rever
ELEVATION DEPTH USCS (Feet)			SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etg
(Feet)	BURING TORMINATE BACKFILLEDW/ BONTS	ED AT 1.077 BOS	CATE.	(PPM/CPM) NA	(Sample IDs/Depths/Core Box/EU LUTISS - 075-50 SO COLLECTED FOR 0-1 ON 04/12/19 C 1035 FOR TOTAL + HEXAVIAUS CHROMIUM
ELITMW-010 SEQLOGIST SIGNATURE/DATE, MANUA OL	DIRT/GRAN				POREHOLE NUMBER

itrw [י ווסר	ING	OG	DISTRICT			BOREHOLE NUME	BER
			_OG	USACE - Louisville			LLIISS -	p76
1. CO	MPANY NAM	ΛE		2. DRILLING SUBCONTRAC	TOR		SHEET 1	OF 1
SAI		*11		NA				
3. PR		RV4AP	PBAUS RI				Ravenna, OH 4	
	IAKE/MODEL	an La		Lannihope	1/\A	VERTICAL	INCLINED	DEGREES
	ER LEVEL MA		· NA	WATER LEVEL SERIA		Colors from	n Munsell Soil Color C	
ELEVATION	DEPTH	USCS		CATION OF MATERIALS	SPT DATA	MONITORING	REM	
	(Feet)				(0.5 Feet)	(PPM/CPM)	(Sample IDs/Dept	
			SICT Some	fine Send, Dk			LL 1185-0	76-5642-
			Grayish Braws	107R4/2, seft, Law			LL1155-9	176-6183
			plastizing, T	race organics (rests)			LL 11se-6	76-6182
			Trace Course Gr	evel,	Jane J.		@1420	hr
					1.42	NA	metals, P.	441s, +PC
		NU	=(101)	little fine send,	Augur d-1		6 xplesi	الدو
		اأر	SICTIONS	11 tomal Dace	0	+0	- '	
			Trace No A	-guler Gravel, Trace			N 5579	992.09
			Cley, it Ol	WB12-54 5/3.			N 531	/
			Soft, Dam	o, Highly plastic,			£ 2352	142.29
	_		mottled yell	Colorigh Brown			elv. 971.	
			10915 318				e10, 9 11.	34
	1							
			Tomineted	Barren at 1' Ne				
		L.,	BORING COMPLET	Barry at 1 BCS HAND	A4668 11			_
OMMENTS	/ SKETC	Н			NSO WEST			
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						P		***************************************
OLOGIST SIGNA	0			QA/QQ SIGNATURE/DA/TE	1		BOREHOLE NUMBE	
Sto	NW	<u>/</u>	4/12/10	1 Kg 4 Plo	110		LL1155-9	שנו ע

HTRW DRIL	ING	OG	DISTRICT		1920	BOREHOLE NUMBER
TIKW DRIL		_OG	USACE - Louisvil	le		LL 1155-077
.1. COMPANY NA	ME		2. DRILLING SUBCONTE	RACTOR		
SAIC			NA			SHEET 1 OF 1
		BAGS RI	4. LOCATION		ate Route 5 R	avenna, OH 44266
NAME OF DRILLER	on ha	nich / Rich Sprinz/	6. DIRECTION OF	17	VERTICAL	MINCLINED DEGREE
NOTES PID MAKE/MODE	L: M	4		N/VI	Colors from	Munsell Soil Color Chart, Rev
WATER LEVEL N	1		WATER LEVEL SE			1994
ELEVATION DEPTH (Feet)	USCS	CLASSIFICATION C	OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc
	SC	Fine, SAWD Trace Fine Grove, Dix Gran Louse, moist, med. Accumulation strace CLAY, Source Sil Trace Fine Grove, a Drown 10/26/2, Si Plasticity, Deep reddish yellow 7.	, heatley	the Head Augor Augor	NA	UNSS-477-569 E1330 for Metals, PAHSPO + Explains N 558343 3d E 2352664.88 E1V. 961.20
OMMENTS / SKET			A 3" SS HAND	Treas	Busse	
		3			The state of the s	
			0.011100000000			100 to 100 to 100 to 100 to
DLOGIST SIGNATURE/DAT	1	2/16	SIGNATURE/DATE	6/10	1	LL 1155-477

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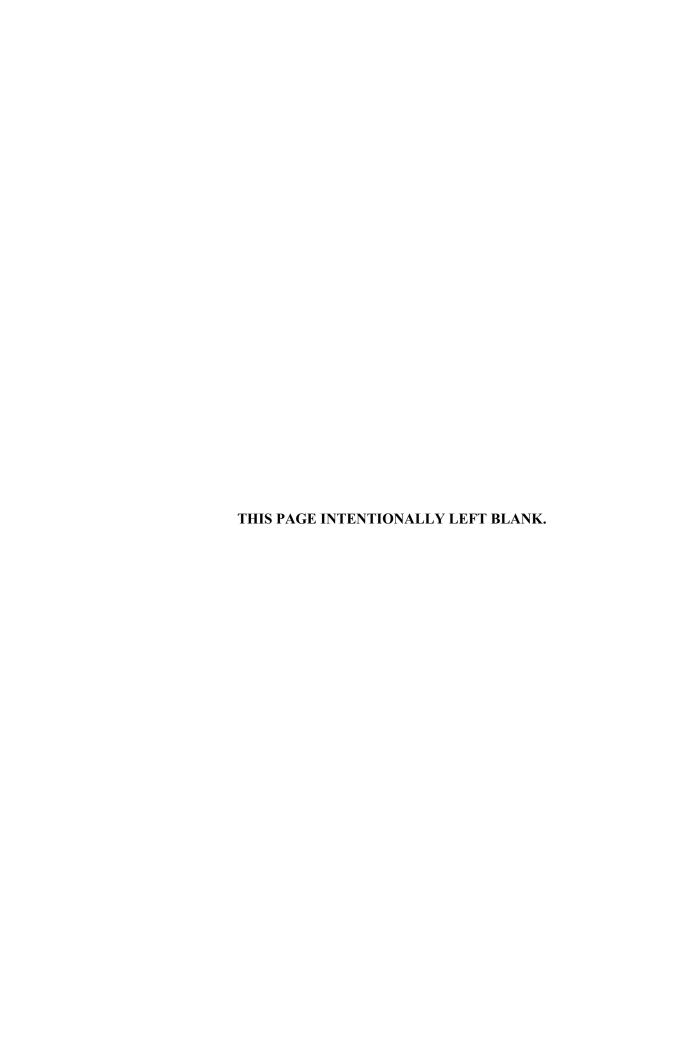
HTRW [DRII I IN	IG I OG	DISTRICT			BOREHOLE NUMBER
			USACE - Louisville			11155-078
	MPANY NAME		2. DRILLING SUBCONTRAC	TUR		SHEET 1 OF
SAI			NA LOCATION -			
3. PKI		DO RI				avenna, OH 44266
	AKE/MODEL:	Lourish Fm. 17 Com	.i-y h		VERTICAL	INCLINED DEGI
	R LEVEL MAKE/I	MODEL: M	PID SERIAL#: ** WATER LEVEL SERIA	•,	Colors from	Munsell Soil Color Chart, Rev
ELEVATION			CATION OF MATERIALS	SPT DATA	MONITORING	REMARKS
	(Feet)			(0.5 Feel)	(PPM/CPM)	(Sample IDs/Depths/Core Box
		Trace (lay, To Dk Greyish Bre Domp, High Plancos, Iron A Brewn 16th 6th Med. SAWD, The Five Grand. Lt.	ecumulation Strong 5-5/6, 4/12/10	Hend Auger 4-1	NU	LL1135-078-560 @ 1245 &r PAHS, PCBS, Mul- Explosines N 558225.89 E 2352419.65 elv. 971.46
	SKETCH SKETCH STANDIST AND STANDIST HOW	J. Gass	Bush Asphal			
OLOGIST SIGNA		4/12/10	QA/QC SIGNATURE/DATE	126160		OREHOLE NUMBER

ITD\A/ I	DRILLIN	4G I	06	DISTR	ICT			BOREHOLE NUMBER	_
111244 1	NKIFFII	10 L			CE - Louisville			il 11 ss-\$	וקי
1,00	DMPANY NAME			2, DRII	LING SUBCONTRACTO)R	· ·	SHEET 1 0	F '
SAI	_			NA				SUEE! 1 O	
3. PR	ROJECT RVA	AP PB	448 RT					avenna, OH 442	66
NAME OF DRIL			ich/Emily Canning		5. DIRECTION OF BORE	HOLE A	VERTICAL	INCLINED	DEGR
NOTES PID N	MAKE/MODEL:	MA	40	ı		M	Colors from	Munsell Soil Color Char	l, Rev
	ER LEVEL MAKE				WATER LEVEL SERIAL	 	T ,,,,,,,,,	1994	
ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION	OF MATE	RIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARK (Sample IDs/Depths/	-
	(1 661)		SILT (ML), SOM	مزيء	" SAND	(0.0100)	(11 1001 10)	LL1155-479-	
		nc	Trace him Grawel. (1.0-			@1145 + MS/	
	'		10 7/2 5/2 - 1) t Gray	י נו אין נולטונ				For MCs. SV	•
		_	4/2, soft, dump	130	abate it	Hand		Pesticald, PCI.	
			Trace organies !!	ر داند (ا عانداء)	Lenning /	Hand Auger 4-1	NA	TAC Metal 1	
					311	del	NA-	Projection 15.70	color
			Very Fine SAWD, 1	1.++6	2011/14600				
			clay, Toza Fina	Urev	el Leuse,		00		
			from Iccumulat	fig in i	browm.sh				
			Yellow 104RGG						
	1 1								
	'-	-	Terminated Borin	+	I'BOS.	10)	(1)		
			BORING COMPLETE US	NA A	3" SS HAND	AUbbe			
OMMENTS	SKETCH	100		1 1			X		
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				ded	Asphalt				
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DLOGIST SIĞNI	AFURE/DATE		Work		Aschult			BOREHOLE NUMBER	

ITRW I	ORILL	ING L	.OG		RICT ACE - Louisville	•		LL 1155-450
1. CC	MPANY NAM	ΛΕ	1.2		RILLING SUBCONTRACTO	OR .	100-5	22 155-400
SAI	C			NA	x Type			SHEET 1 OF 1
		VAAPI	13 Ade R+		4. LOCATION DV	AAD 8/51 Sta	to Pouto 5. P	avenna, OH 44266
NAME OF DRIL	LER R	Cua lau	wich/Emily Cum	. 57	6. DIRECTION OF BORE		VERTICAL	INCLINED DEGRE
NOTES PID N	AKE/MODEL	:	J41247 C 01/19 C 0 41	nyen	PID SERIAL#:			Munsell Soil Color Chart, Rev
WAT	ER LEVEL MA	AKE/MODEL:			WATER LEVEL SERIAL	# :		
ELEVATION	DEPTH	USCS	CLASSIFICATION			SPT DATA	MONITORING	REMARKS
	(Feet)		- (44.)			(0.5 Feet)	(PPM/CPM)	(Sample IDs/Depths/Core Box/Et
			SILT (ML), Tr True Five Grand, Very South, Mois Trace organissia	CCP	Fire Sand			LL 1185-484-5640
			Treep Five Gravel,	りん	Gay 104/2 41			@ 11.05 For
			Very Solt, weis	t, H	1.56/4 Plan	Her		Explosives, metals
	—		Treip orsenics	· /	Jay Mesne	Aug o		PAlts + PCBS
		ML)	(5)		dre		
						4	M	N558574.12
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			Termineter Barry	ch	1 BG5,			
			BORING COMPLETE US	146	3" SS HAND 1	hubbe		
OMMENTS	/SKETC	Н		- 100				
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		1	LLIIMW-COS			1/ / W	L1155-48	
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OLOGIST SIGN	ATURE/DATE	E	() () () () () ()	C SIGN	ATURE/DATA			BOREHOLE NUMBER
11-9	M	48	(4/12/10	Ru	XIN A	61111		LL 1135-484

		10.1.00	DISTRICT				BOREHOLE NUME	SER
HIRW	DRILLIN	IG LOG	USACE -	Louisville			LL1155-	4.91
1. CC	DMPANY NAME		<u> </u>	BUBCONTRACTO)R		 	
SAI	C		NA				SHEET 1	OF
		18- RI	4, LOCA	TION RV/	AAP 8451 Sta	te Route 5 R	<u> </u>	4266
5_NAME OF DRILL		Lourich / Cmily	6. DIRE	CTION OF BORE		VERTICAL	INCLINED	
NOTES PID M	MAKE/MODEL:	NA	PID SEI	RIAL#: 1/	A	Colors from	Munsell Soil Color C	hart, Re
WATE	ER LEVEL MAKE/N	MODEL: NA	WATER	LEVEL SERIAL#	NA		1994	
ELEVATION			SIFICATION OF MATERIALS		SPT DATA	MONITORING	REM	ARKS
0.5	(Feet)				(0.5 Feet)	(PPM/CPM)	(Sample IDs/Depi	
		SILT (M	c), Little Fin	Sand			LL115=4	81:
		Trees Grev	et, DkGray 10%	124/1.			Co dese	1.
		Soft, mois	A la Phase	, <i>d</i>	14. 1		Tarria 1	12.
	→	Tree	11 100 11411112	· 7.	Auger		13/2 (45 7 10	. 03,
	<u> </u>	16 There	nics, (routs), "Fi	42-50	de	NA		
		Physic (Ex	of, Dikoray 107 A, Low Plastiz nics. (routs) Frolosilys bere hole si	امالياله (Y1 '		N 2288	GO
		Browsille	50				€ 235 3	346
		Plastic (Exp	411410				C 233	•
1							elv. 958	12
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		Terminete	of Bown DI	RES				
		BORANG COMP	LETE USING A 3"	SS HANK	ANGER			
COMMENTS	SKETCH							
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			LL II my of a	1/ss-481	P)	cocombon cocombon strz sin Tites 4/112/		
			LL II my of a	1/ss-481	P)	cocombon cocombon strz sin Tites 4/112/		
				1/ss-481	P)	cocombon cocombon strz sin Tites 4/112/		
EOL OGIST SIGN			LL II my of a	W/ss-48/	P)	stie 4/12/		





		DISTRICT		
HTRW DRILLING L	-OG	USACE - Louisville	9	BOREHOLE NUMBER
1. COMPANY NAME		2. DRILLING SUBCONTRA	ACTOR	100100 00
SAIC		Frontz Drilling		SHEET 1 OF Z
3. PROJECT RUMP	1934 OS RE	4. LOCATION	TVAAF 6431 State A	oute 5 Ravenna, OH 44266
5. NAME OF DRILLER 7. SIZES AND TYPES OF SAMPLING EQUIP	LECKRONE	1	DEL OF DRILL Geopro	be QUZQDT
3"× 1 Har	_		ELEVATION/DATUM (200 C	
1.5" x4 (A)	STATE LIMER	10. PAILLIPA	<u> </u>	9' NAOS3
113 14 10	C 1.		ROUNDWATER ENCOUNTERED	© COMPLETED: 1620
2" 44 D	AL TUBE	16. DEPTH TO	O WATER/ELAPSED TIME AFTER B	OREHOLE COMPLETION
12. OVERBURDEN THICKNESS 13. DEPTH DRILLED INTO BEDROCK	3FT		<i>W</i>	+
14. TOTAL DEPTH OF BOREHOLE	NA 12+	17. OTHER W	ATER LEVEL MEASUREMENTS (IN	ŕ
18. GEOTECHNICAL SAMPLES	UNDISTURBED:	DISTURBED:	19. TOTAL NUMBER OF	,
00 01/51/01/01/01/01	CHEMINES PHH PUBLICADE	NA OTHER:		OTAL CORE RECOVERY %
		18/10; 1520	DATE COMPLETED/ABANDON	IED: 03/18/10: 1020
BACKFILL TYPE: GROUT 23. NOTES BYC - Background	BENTONITE	I TEMPORARY WELL	POINT MONITORIN	7,0
BKG. S Background	BGS: Below Ground Surface			s per Million
: First Water End		atic Water Level	NA: Not Applicable	
LOCATION SKETCH/COMMEN	ITS		SCALE:	None
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EOLOGIST SIGNATURE/DATE	La Jaka QAVQC	BIGNATURE/DATE	\ ~! !	BOREHOLE NUMBER
Comanda Vivi	tin 03/18/10) 5/15/pg	W153-060





RVAAP PBA 2008 Remedial Investigation

Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Portage County

RVAAP-44 Load Line 11 LL11sb-060

: 03/18/10; 1520 : 03/18/10; 1620

: 557534.13

Easting Coord. : 2352824.39 Total Depth of Boring : 13.0 ft

Start Date

End Date

Northing Coord.

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill
Type of Drill Rig : Direct Push Technology

Borehole Diameter

Type of Drill Rig : Direct Push Techn Geologist : Amanda Trenton Oversight Company : SAIC

Sampling Equipment : 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

			1 ortage county	tal Deptil of Bolling . 13.0	o it			
Depth in feet	USCS Symbol	USCS Graphic	Description		Analyses	Recovery	Collection Interval	Comments
0-	ML		(0.0' - 0.6') SILT (ML); 10YR3/2 dark gr loose; wet; low plasticity; significant roo		LL11sb-060-5551-SO	1.0'/1.0'		Soil Color Chart Munsell 2000 Rev. Ed.
2-	CL		\throughout. (0.6' - 3.0') CLAY (CL); some Silt; 10Yl brown and 2.5Y7/1 light gray; medium is wet from surface water; high plasticit (2.0' -3.0') Stiff. (3.0' - 5.2') Very fine grained SAND (S' yellowish brown and 10YR5/1 gray; me	stiff; dry, exterior ty. W); 10YR5/6	collected from 0.0' - 1.0' o 03/18/10 at 1540 for TAL Metals + Hg, PCBs, PAHs and Explosives. LL11sb-060-5552-SO collected from 1.0' - 4.0' o 03/18/10 at 1555 for TAL Metals + Hg, PCBs, PAHs and Explosives.	s, on 2.6'/3.0'		
4-	sw		nonplastic. (4.0') Introduction of trace 1" subround					
5-			(4.8 - 5.2') Wet.	N. Park - O'lle -	LL11sb-060-5553-SO collected from 4.0' - 7.0' o	n		
6-	SM		(5.2' - 5.75') Medium grained SAND (S Gravel, 1/4", subangular; 10YR5/4 yell medium dense; wet. (5.75' - 10.85') Very fine grained SANE little Gravel, 1/4", subangular; 10YR5/4 brown; medium stiff; damp to dry; none content increases with depth.	owish brown; O (SM); little Silt; 4 yellowish	03/18/10 at 1603 for TAL Metals + Hg, PCBs, PAHs and Explosives.	3.17/3.0		
8- 8- - - 9-	SM				LL11sb-060-5554-SO collected from 7.0' - 13.0'	2.7'/3.0' on		
10-					03/18/10 at 1615 for TAL Metals + Hg, PCBs, PAHs and Explosives.	5,		
11-			(10.85' - 13.0') SILT (ML); little Sand; tr yellowish brown; medium stiff; damp; lo	race Clay; 10YR5/4 ow plasticity.		2.8'/3.0'		
12-	ML		(11.8' - 13.0') Silt is 10YR5/1 gray.					
13-			Boring terminated at 13.0 ft bgs.					Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.

		DISTRICT			BOREHOLE NUI	MOED
HTRW DRILLING	LOG	USACE - I	Louisville		WISE	
1. COMPANY NAME			UBCONTRACTOR		Corre	<i>)</i>
SAIC		Frontz Dril	ling		SHEET 1	of 2
3. PROJECT KUMH) PBA 08 RI	4	LOCATION RVA	AP 8451 Stat	e Route 5 Ravenna, (OH 44266
7. SIZES AND TYPES OF SAMPLING EQU	y Leckrone		MAKE/MODEL OF DRIL	Geo	probe UU20 >	
200 11 11	AND AUGUR	8. 9.	BOREHOLE LOCATION	N-55789	9,781-23527 33	18:7739'
	ACETATE LINER	10		STARTED: 15	COMPLETED:	1635
2" ×41	DUAL TUBE	16	6. DEPTH TO WATER/EI	APSED TIME AFT	ER BOREHOLE COMPLETION	
12. OVERBURDEN THICKNESS	13FT		N ₁		MA	
13. DEPTH DRILLED INTO BEDROCK	NA	17	. OTHER WATER LEVE	L MEASUREMENT	S (INLCLUDE DATE/TIME)	
	371				NA	
18. GEOTECHNICAL SAMPLES	UNDISTURBED:	DISTURBED: -		19. TOTAL NUMBE	R OF CORE BOXES NA	
20. CHEMICAL SAMPLES	CHEMINET CON ATH PCORAD:	ŅA o	THER:		21. TOTAL CORE RECOVERY	'% NF)
22. DISPOSITION OF BOREHOLE	DATE STARTED/INSTALLED	7/10	DATE	COMPLETED/ABAN	IDONED: 03/7/10	
BACKFILL TYPE: GROUT	BENTONITE	TEMPOF	RARY WELL POINT	I MONIT	ORING WELL	
23. NOTES BKG: ≤ Background	BGS: Below Ground Surface	e Ci	PM: Counts per Minut	e PPM:	Parts per Million	
: First Water E	incountered : Sta	itic Water Leve	el NA: N	ot Applicable		
LOCATION SKETCH/COMME	ENTS		(Simu MSCA	LE: None	
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GEOLOGIST SIGNATUŖE/DATE	10.400	CICNATURE				
	A astalia Quad	SIGNATURE/DA		-/-/	BOREHOLE NUMB	
imanda no	nton 03/17/10		<u> </u>	5/18/18	, JUISB	-WUI





: 13.0 ft

Driller

Designation of Drill

Type of Drill Rig

Geologist

Oversight Company

Drilling Company

: Jeremy Leckrone : Geoprobe 6620DT : Direct Push Technology : Amanda Trenton

: Frontz Drilling

: SAIC

RVAAP PBA 2008 Remedial Investigation Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266 Portage County

 Start Date
 : 03/17/10; 1530

 End Date
 : 03/17/10; 1635

 Northing Coord.
 : 557899.78

 Easting Coord.
 : 2352718.7739

Total Depth of Boring

Borehole Diameter : 2' Sampling Equipment : 1.

: 1.5" x 4' Long Acetate Liner : 2" x 4' Dual Tube : 3" Hand Auger

Collection Interval Graphic Symbol Depth in feet Recovery USCS (USCS **Analyses** Description Comments 0 (0.0' - 0.75') FILL; Sand, Silt, Gravel, building demolition Soil Color Chart Munsell 2000 Rev. Ed. debris; Silt matrix is 10YR3/2 very dark grayish brown; 1.0'/1.0' LL11sb-061-5555-SO medium stiff; dry. collected from 0.0' - 1.0' on ML (0.75' - 1.25') CLAY and SILT (ML); little Sand and 03/17/10 at 1545 for TAL Gravel; 10YR4/3 brown and 10YR4/6 yellowish brown; Metals + Hg, PCBs, PAHs, medium stiff; dry; medium plasticity. and Explosives. (1.25' - 4.7') SILT (ML); little Clay; trace fine Gravel; 2 10YR5/6 yellowish brown and 10YR4/3 brown; medium LL11sb-061-5556-SO collected from 1.0' - 4.0' on stiff; damp; low plasticity. 2.7'/3.0' 03/17/10 at 1620 for TAL ML 3 Metals + Hg, PCBs, PAHs, and Explosives. 4 (4.7' - 7.3') CLAY (CL); some Silt; trace Gravel; 10YR4/4 LL061sb-061-5557-SO 5 dark yellowish brown; some iron accumulations; medium collected from 4.0' - 7.0' on stiff; damp; low plasticity; trace Shale at 5.2'. 03/17/10 at 1625 for TAL 2.9'/3.0' Metals + Hg, PCBs, PAHs, and Explosives. CL (7.3' - 7.5') GRAVEL (GM); Silt matrix; 10YR4/6 dark yellowish brown; dry. 8 (7.5' - 11.9') Very fine grained SAND (SM); some Silt; trace Gravel; 10YR5/1 gray; medium dense; damp; 2.3'/3.0' nonplastic. 9 LL11sb-061-5558-SO SM collected from 7.0' - 13.0' on 10 03/17/10 at 1635 for TAL Metals + Hg, PCBs, PAHs, and Explosives. 11 2.4'/3.0' 12 (11.9' - 13.0') SILT (ML); little Sand; trace Clay; 5Y5/2 olive gray; medium stiff; damp; low plasticity. ML 13 Boring terminated at 13.0 ft bgs. Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
Samples were composited and homogenized for all analyses.

HTRW DRILLING LOG	USACE - Louisville	BOREHO	LE NUMBER (1) (02
1. COMPANY NAME	2. DRILLING SUBCONTRACTO	R	المال المالة
SAIC	Frontz Drilling	SHEET	1 OF 2
3. PROJECT RUMAP POA OS RI	4. LOCATION	RVAAP 8451 State Route 5 Raver	nna, OH 44266
NAME OF DRILLER JPROMY I FLUCTOUE	6. MAKE/MODEL C	Geoprobe (Q)	DT
SIZES AND TYPES OF SAMPLING EQUIPMENT	8. BOREHOLE LO	CATION N-558162, 4509 E	-2352689.
3" XI" PLAND TILGER	9. SURFACE ELEV	VATION/DATUM NAO 83	
3" x1" ITAND AUGER 115" x4' ACETATE UN 2" x4' DUAL TUBE	10. DRILL DATE/T	ME STARTED: 300 COMPLET	ED: 1350
2"x4' DUAL TUBE	16. DEPTH TO WA	TER/ELAPSED TIME AFTER BOREHOLE COMPL	ETION
OVERBURDEN THICKNESS 13+ FF	all the same of the latest and	NA	
DEPTH DRILLED INTO BEDROCK NA	17. OTHER WATE	R LEVEL MEASUREMENTS (INLCLUDE DATE/TIN	NE)
TOTAL DEPTH OF BOREHOLE 13 FT ausis		MA	
B. GEOTECHNICAL SAMPLES UNDISTURBED:		19. TOTAL NUMBER OF CORE BOXES	NA
D. CHEMICAL SAMPLES CHEMICAL	NA OTHER:	21. TOTAL CORE REC	NAL2
2. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED ACKFILL TYPE: GROUT BENTONITE	1300 TEMPORARY WELL POI	DATE COMPLETED/ABANDONED: 03/18/	10; 1350
B. NOTES BKG: ≤ Background BGS: Below Ground Surfa			-
	Static Water Level	NA: Not Applicable	
THE TANK NAME OF THE PARTY NAM	T KULT	COALE: None	
OCATION SKETCH/COMMENTS		SCALE: None	
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RVAAP PBA 2008 Remedial Investigation

Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Portage County

RVAAP-44 Load Line 11 LL11sb-062

: 03/18/10; 1300 : 03/18/10; 1350 Northing Coord. : 558162.4509

: 2352689.5754

Total Depth of Boring : 13.0 ft

Start Date

End Date

Easting Coord.

Drilling Company : Frontz Drilling Driller : Jeremy Leckrone : Geoprobe 6620DT Designation of Drill : Direct Push Technology Type of Drill Rig

Geologist : Amanda Trenton Oversight Company : SAIC Borehole Diameter

Sampling Equipment : 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

			1 ortage county	Total Depth of Bolling . 13.0	0 11			-
Depth in feet	USCS Symbol	USCS Graphic	Descriptior	٦	Analyses	Recovery	Collection Interval	Comments
0- 1- 2-	ML CL		(0.0' - 0.75') SILT (ML) some Clay; tr yellowish brown, 10YR6/8 brownish 10YR4/2 dark grayish brown; mediun plasticity; significant roots throughou (0.75' - 2.9') CLAY (CL); some Silt; 1 brown and 10YR4/2 dark grayish brown and 10YR4/2 dark grayish brown the stiff; dry; medium plast	yellow, and m stiff; damp; low it. OYR5/4 yellowish own; medium stiff	LL11sb-062-5559-SO, LL11sb-062-6189-FD, & LL11sb-062-6193-QA collected from 0.0' - 1.0' or 03/18/10 at 1310 for TAL Metals + Hg, PCBs, PAHs and Explosives.			Soil Color Chart Munsell 2000 Rev. Ed.
3- 4- 5- 5- 6-	SM		(2.9' - 9.2') Very fine grained SAND (trace Clay; 10YR5/4 yellowish brown plasticity; increased clay content with (4.8') Medium grained Sand lens. (5.3') Subangular Gravel. (5.5') Subangular Gravel. (5.8') Iron staining; siltier.	n; soft; damp; low	LL11sb-062-5560-SO collected from 1.0' - 4.0' or 03/18/10 at 1334 for TAL Metals + Hg, PCBs, PAHs and Explosives. LL11sb-062-5561-SO collected from 4.0' - 7.0' or 03/18/10 at 1342 for TAL Metals + Hg, PCBs, PAHs and Explosives.	2.7'/3.0'		
8-	SM		(6.5' - 7.2') Soft; moist; wet by 7.0' bo (9.2' - 10.3') Medium grained SAND 10YR5/4 yellowish brown; medium d	(SM); little Silt;	LL11sb-062-5562-SO collected from 7.0' - 13.0' c	2.9'/3.0'		
11-	ML ML		(10.3' - 12.3') SILT and CLAY (ML); a dry; medium plasticity. (12.3' - 13.0') SILT (ML); little Sand a gray; medium stiff; dry; low plasticity. Boring terminated at 13.0 ft bgs.	and Clay; 5Y5/2 olive	03/18/10 at 1348 for TAL Metals + Hg, PCBs, PAHs and Explosives.	2.6'/3.0'		Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.





RVAAP PBA 2008 Remedial Investigation

Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Boring backfilled with sodium bentonite chips and hydrated.

Shelby tubes sealed with wax and capped.

RVAAP-44 Load Line 11 LL11sb-085

: 03/18/10; 1350 : 03/18/10; 1440

: 558162.4509

: 2352689.5754

Start Date

End Date

Northing Coord.

Easting Coord.

: Frontz Drilling **Drilling Company** Driller : Jeremy Leckrone : Geoprobe 6620DT Designation of Drill Type of Drill Rig

: Direct Push Technology : Amanda Trenton

: SAIC Oversight Company Borehole Diameter

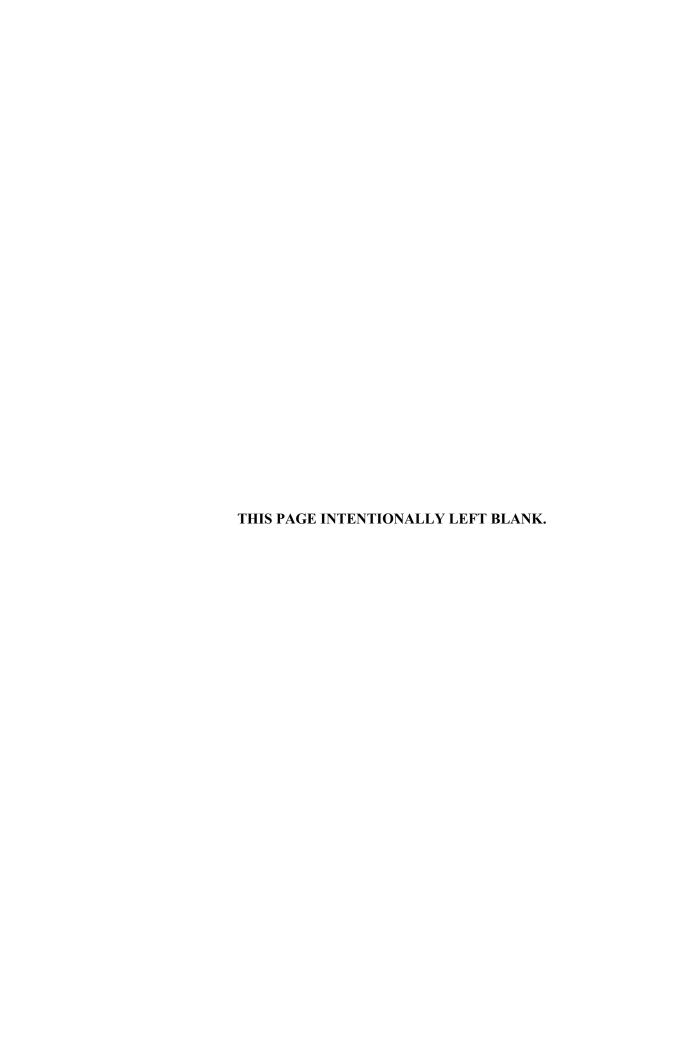
Geologist

Sampling Equipment : 1.5" x 4' Long Acetate Liner

LL11sb-085

: 2" x 4' Dual Tube : 3" Hand Auger

Description Analyses Comments Comments Sulfactor Chart Munsell 2000 Rev. Ed. Sulfactor Chart Munsell		Portage County	Easting Coord. : 235 Total Depth of Boring : 13.	52689.5754 0 ft			: 3" Hand Auger
ML (0.0"-0.75) SLLT (ML) some Clay, trace Gravel; 107R5/4 yellowish brown, 107R5/4 yellowish brown, 107R5/4 yellowish brown, 107R5/4 yellowish brown and 107R4/2 dark grayish brown; medium stiff; damp; low plasticity; significant rosts throughout. 2			on	Analyses	Recovery	Collection Interval	Comments
	1 -	10YR5/4 yellowish brown, 10YR6/4 and 10YR4/2 dark grayish brown; low plasticity; significant roots throw (0.75' - 2.9') CLAY (CL); some Silt; brown and 10YR4/2 dark grayish brown and 10YR4/2 dark grayish brown and 10YR5/4 yellowish brown plasticity; increased clay content wellow (4.8') Medium grained Sand lens. (5.3') Subangular Gravel. (5.5') Subangular Gravel. (5.8') Iron staining; siltier. (6.5' - 7.2') Soft; moist; wet by 7.0' (9.2' - 10.3') Medium grained SANI 10YR5/4 yellowish brown; medium (10.3' - 12.3') SILT and CLAY (ML) dry; medium plasticity.	B brownish yellow, medium stiff; damp; ughout. 10YR5/4 yellowish brown; medium stiff isticity. D (SM); some Silt; wn; soft; damp; low ith depth. D (SM); little Silt; dense; moist. T and Clay; 5Y5/2 olive	LL11sb-085-5567 collected from 2.0' - 3.9' at 1430 for Porosity, Bulk Density, Moisture Content, Total Organic Carbon, Permeability, and Grain Siz Fraction Analysis. Shelby Tube LL11sb-085-5568 collected from 4.0' - 5.5' at 1440 for Porosity, Bulk Density, Moisture Content, Total Organic Carbon, Permeability, and Grain Siz	1.9'/2.0' e		Munsell 2000 Rev. Ed.



BKG: S Background BGS: Balow Ground Surface CPM: Counts per Minute PPM: Parts per Million First Water Encountered Stalic Water Level NA: Not Applicable						DISTRICT	Г						BORE	HOLE NUMB	ER	Ŧ
SAIC FROILE DHILLING SPECIAL PROPERTY LOCK RET ALCOCATION RIVARP 8451 State Route 5 Revening, OH 44266 NAME OF ORLIEST DEVICITY LOCK KRONE ALCOCATION RIVARP 8451 State Route 5 Revening, OH 44266 SEES NOT TYPES OF SAMPLING BURNHART SEES OF SAMPLING BURNHART SEES NOT TYPES OF SAMPLING BURNHART SEES OF SAMPLING BUR	HTRW DF	RILLING	LOG			USACI	E - Lo	uisville					L	LIIS	B-W	12
A PROJECT RUMP PPA DE RI ALCORTON FIVAAP 8451 State Route 5 Ravenna, OH 44266 NAME OF PRILLEP DELICITY CELE TRUE SEES NOT TYPES OF SAMULING BOUNDERST 31 X 1 HAND ACCE BORRINGE ELEVATIONACHAM 1 CELE TRUE SUPERA NOT TYPES OF SAMULING BOUNDERST BORRINGE ELEVATIONACHAM 1 CELE TRUE SUPERA DELICITIES TATTICE 15,015 COUNTETED IN DOI 10. CEPTER TO WATERRELASSED TIME AFTER SCREED TIME 10. CEPTER TO WATERLASSED TIME AFTER SCREED TIME 10. CEPTER TO WATERRELASSED TIME AFTER SCREED TIME 10. CEPTER TO WATERRELASSED TIME AFTER SCREED		NY NAME							TOR	1940			SHE	ET 1	of Z	1
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SITES AND THESE OF SAMPLING EQUIPMENT SUPPLY AND CONTROL STATE	5. NAME OF DRILLER	Jekemy	1014	ROUT			8. M	AKE/MODE							200 mg/mg/mg	
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DISTURBED: 19. TOTAL NUMBER OF CORE BOXES NA							۱". ۵	THEN WA	WEN LEV	PEL MIEAGO			DE DATE	TIME/		
CHEMCAL SAMPLES CHEMCA		the second second		BED:		DISTI IDBI	ED:	Euros.		19. TOTA			RE BOXES	NΔ		_
CONTION OF BOREHOLE DATE STARTEDINSTALLED D3 72 U 1505 DATE COMPLETED/ABANDONED TEMPORARY WELL POINT MONITORING WELL A NOTES BKG S Background BGS Below Ground Surface CPM Counts per Minute PPM Parts per Million The start of the start	20. CHEMICAL SAMPLI	ES			- BAD		_	FR:	ALL I						472	
ACKFILL TYPE: GROUT F BENTONTE TEMPORARY WELL POINT MONITORING WELL NOTES BKG: S Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million T: First Water Encountered SCALE: None OCATION SKETCH/COMMENTS SCALE: None FLOW				-						E COMPLET			_			_
BKG: s Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▼: First Water Encountered ▼: Static Water Level NA: Not Applicable OCATION SKETCH/COMMENTS SCALE: None DIRT ROPED LUISBOUS PM. Parts per Million None The Scale None DIRT ROPED LUISBOUS PM. Parts per Million None DIRT ROPED LUISBOUS PM. WATER ASTRONOMENTS STEED SOME OF ST	BACKFILL TYPE:	GROUT				TEN	MPORAF	RY WELL F	OINT					שטי נשו	J	
OCATION SKETCH/COMMENTS SCALE: None DIRT RUND LHISBOUS PHONOLOGY WITH WHITE THOM TO STEED SLOTE UP SOUND AND STEED SLOTE UP SOUND AND SLOTE PHONOLOGY STEED SLOTE AND SLOTE SOUND AND SLOTE SOUND STEED SLOTE STEED SLOTE SOUND AND SLOTE SOUND SOUND STEED SLOTE SOUND AND SLOTE SOUND SO																_
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	amane	la Chi	entin	(03/77		X-)) (5713	105			lu	1150	-CLA	2,





Drilling Company Driller : Jeremy Leckrone Designation of Drill : NA

Type of Drill Rig : NA

Geologist : Amanda Trenton

: Frontz Drilling

Oversight Company : SAIC Borehole Diameter : 3"

RVAAP PBA 2008 Remedial Investigation Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266 Portage County

Start Date : 03/22/10; 1505 **End Date** : 03/22/10; 1600 Northing Coord. : 557777.46 Easting Coord. : 2352363.29

Total Depth of Boring : 5.0 ft

Sampling Equipment : 3" Hand Auger

Depth in feet	USCS Symbol	USCS Graphic	Descriptio	on	Analyses	Recovery	Collection Interval	Comments
1-	SM		(0.0' - 0.75') SAND (SM); some Sil some asphalt; 10YR3/3 dark brow water in ditch; significant organics content increases with depth. (0.75' - 2.5') SILT (ML); some Sand brown; medium stiff; dry; low plastic	n; loose; wet from throughout. Silt d; 10YR5/4 yellowish	LL11sb-063-5563-SO collected from 0.0' - 1.0' on 03/22/10 at 1530 for TAL Metals + Hg, PCBs, PAHs, and Explosives.	1.0'/1.0'		Soil Color Chart Munsell 2000 Rev. Ed.
2-	CL		(2.5' - 4.0') CLAY (CL); some Silt; yellowish brown; medium stiff; dry, ditch; medium plasticity.	little Sand; 10YR5/4 wet from water in	LL11sb-063-5564-SO collected from 1.0' - 4.0' on 03/22/10 at 1545 for TAL Metals + Hg, PCBs, PAHs, and Explosives.	3.0'/3.0'		
4	ML		(4.0' - 5.0') SILT (ML); little Clay; tr 10YR5/4 yellowish brown; medium water in ditch; low plasticity.	stiff; dry, moist from	LL11sb-063-5565-SO collected from 4.0' - 5.0' on 03/22/10 at 1555 for TAL Metals + Hg, PCBs, PAHs, and Explosives.	1.0'/1.0'		
6 - 1 - 1 - 1 - 1 - 1 - 1 - 1								
7-								Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.

HTDW DDU LING	100	DISTRICT				BOREHOLE NUM	BER
HTRW DRILLING	LUG	USACE	- Louisville			LLIIS	-O64
1. COMPANY NAME		2. DRILLING	G SUBCONTRACTOR				, <u>v v 1</u>
SAIC		Frontz D	Orilling			SHEET 1	of Z
3. PROJECT RUMME. NAME OF DRILLER TO THE PROJECT RUMPS OF THE	2 YBH 08 KH		4. LOCATION	RVAAP 845	1 State Rout	e 5 Ravenna, O	H 44266
SIZES AND TYPES OF SAMPLING EQU	my lelipare		6. MAKE/MODEL OF		Geoprobe	6020 DT	-
3'V	Harris Harris		8. BOREHOLE LOCA	ATION N-55	8273, 8c	134' E-2352	530,9v°
OYI	MUTLORE		9. SURFACE ELEVA	A MOTAGOTT	UMD 83	>	
15' x 4' t	HLETATE LINER		15. DEPTH GROUND	STARTED:	7144	COMPLETED:	145
2" V4"	DUALTUBE					HOLE COMPLETION	
2. OVERBURDEN THICKNESS	313 75		1	ETTELATOED TH	1 IXI	HOLE COMPLETION	
3. DEPTH DRILLED INTO BEDROCK	NA NA		17. OTHER WATER	LEVEL MEASUP	REMENTS (INLCL)	JDE DATE/TIME)	
1. TOTAL DEPTH OF BOREHOLE	1377		1		W		
B. GEOTECHNICAL SAMPLES	UNDISTURBED:	DISTURBED):	19. TOTAL	NUMBER OF CO	•	
0. CHEMICAL SAMPLES	CHEM: MET LOVE POLA /A A RAD:	NA	OTHER:			L CORE RECOVERY %	· M-)
2. DISPOSITION OF BOREHOLE	DATE STARTED/INSTALLED:	3/18/10:	11000 0	ATE COMPLETE	ED/ABANDONED:		Ham
ACKFILL TYPE: GROUT			PORARY WELL POINT		MONITORING V	JUNO 11 W/	πψωι
B. NOTES BKG: ≤ Background	BGS: Below Ground Surfa	ace	CPM: Counts per N	√linute	PPM: Parts pe		
: First Water E	Encountered : 5	Static Water Le		IA: Not Applica	ble		
OCATION SKETCH/COMME	ENTS			-	SCALE:	Nana	
					SCALE:	None	
	E) /Ulia	nu ao o				
			im, D	124 pt			





Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Amanda Trenton

Oversight Company

RVAAP PBA 2008 Remedial Investigation Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266 Portage County

 Start Date
 : 03/18/10; 1100

 End Date
 : 03/18/10; 1145

 Northing Coord.
 : 558223.8434

 Easting Coord.
 : 2352530.9676

Total Depth of Boring : 13.0 ft

Borehole Diameter : 2"
Sampling Equipment : 1.5" x 4' Long Acetate Liner

: SAIC

: 2" x 4' Dual Tube

Analyses				Tortage county	nai Deptil of Bolling . 13				
1	Depth in feet	0,	- 1	Description		Analyses	Recovery	Collection Interval	Comments
brown; medium dense; damp to moist; nonplastic. 2	0-			(0.0' - 0.35') Asphalt			Δ Ω Ω'/1 Ω'		Soil Color Chart
(4.7' - 12.6') Very fine grained SAND (SW); 10YR5/4 yellowish brown; medium dense; wet; nonplastic. Silt content increases with depth. LL11sb-064-5571-SO and MS/MSD collected from 4.0' - 7.0' on 03/18/10 at 1126 for TAL Metals + Hg, PCBs, PAHs, and Explosives. LL11sb-064-5572-SO, LL11sb-064-6188-FD, & LL11sb-064-6192-QA collected from 7.0 - 13.0' on 03/18/10 at 1137 for TAL Metals + Hg, PCBs, PAHs, and Explosives. CL (12.6' - 13.0') CLAY (CL); some Silt; 2.5Y5/1 gray; medium stilf; dry; medium plasticity.	2-			(0.35' - 0.5') Gravel Sub-base. (0.5' - 1.5') Medium grained SAND (SV brown; medium dense; damp to moist; (1.5' - 4.7') Very fine grained SAND an	nonplastic. d SILT (SM);	collected from 0.0' - 1.0' on 03/18/10 at 1108 for TAL Metals + Hg, PCBs, PAHs, and Explosives. LL11sb-064-5570-SO collected from 1.0' - 4.0' on 03/18/10 at 1120 for TAL Metals + Hg, PCBs, PAHs,			Munsell 2000 Rev. Ed. Asphalt and sub-base not included in 0-1 sample. Explosives sample collected from triangulated A, B, & C. Other analytes collected
yellowish brown; medium dense; wet; nonplastic. Silt content increases with depth. SW 9	4-								
SW 9 2 2.85'/3.0' 10 2 10 2 11 2 2 2 2 2 2 2 2 2 2 2 2 2 2	-			yellowish brown; medium dense; wet; r	SW); 10YR5/4 nonplastic. Silt	MS/MSD collected from 4.0' - 7.0' on 03/18/10 at 1126 for TAL Metals + Hg, PCBs,	2.9'/3.0'		
10— 10— 11— 11— 11— 11— 11— 11— 12— 13— 14— 15.							0.051/0.01		
11— 11— 12— 12— 13— 14— 15— 16— 16— 17— 18— 18— 18— 18— 18— 18— 18— 18— 18— 18						LL11sb-064-6188-FD, & LL11sb-064-6192-QA	2.8573.0		
CL (12.6' - 13.0') CLAY (CL); some Silt; 2.5Y5/1 gray; medium stiff; dry; medium plasticity.	11-					03/18/10 at 1137 for TAL Metals + Hg, PCBs, PAHs,	3.0'/3.0'		
		CL		medium stiff; dry; medium plasticity.	5Y5/1 gray;				Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.
Twin boreholes were drilled to obtain volume required for analyses.

	DISTRICT				BOREHOLE	NUMBER	
HTRW DRILLING LOG	USACE	- Louisville			1411	5B-01	05
1. COMPANY NAME	2. DRILLING	SUBCONTRACTOR	William .				
SAIC	Frontz D	rilling			SHEET	1 OF 2	2
3. PROJECT BURAP PBA 48 RI				State Rout	e 5 Ravenr	na, OH 4426	6
NAME OF DRILLER JEKEMY LEXRONE		6. MAKE/MODEL OF		Geoprobe	6620 -	DT	,
SIZES AND TYPES OF SAMPLING EQUIPMENT		8. BOREHOLE LOCA	TION N-55	1476, 74	102 E-2	235186	7, Ø3
3" x 1" HAND AUGER		9. SURFACE ELEVAT	11	JAD 83			
1,5" X4" ACETATE LINER	-	10. DRILL DATE/TIME 03/22/10 15. DEPTH GROUND			COMPLETE	D: 1005	-
2" x4' DUAL TUBE		16. DEPTH TO WATE		NF		TION	
2. OVERBURDEN THICKNESS 13+ FT				NA			
3. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER L	EVEL MEASURE	MENTS (INLCLU	DE DATE/TIME)	
4. TOTAL DEPTH OF BOREHOLE 13FT				NA			
8. GEOTECHNICAL SAMPLES UNDISTURBED: MA	DISTURBED	NA	19. TOTAL N	IUMBER OF COF		NA	
0. CHEMICAL SAMPLES CHE		OTHER:			L CORE RECOV		
2. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED:				D/ABANDONED:		\$, 1 905	
ACKFILL TYPE: GROUT BENTONITE 3. NOTES BYG: C Background BCC. Dalay County		ORARY WELL POINT		MONITORING V			
BKG: ≤ Background BGS: Below Ground ∴ First Water Encountered	_	CPM: Counts per M		PPM: Parts pe	r Million		
· · · · · · · · · · · · · · · · · · ·	: Static Water Le	vei NA	A: Not Applicab	le	···········	· · · · · · · · · · · · · · · · · · ·	
OCATION SKETCH/COMMENTS				SCALE:	None		
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	TPES	LLUSO	2015				
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		LLUSO	2015				
	X Ø X		6 005		BOREHOLE N	UMBER	





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Type of Drill Rig Geologist Oversight Company

Designation of Drill

Drilling Company

Driller

: Jeremy Leckrone : Geoprobe 6620DT : Direct Push Technology

: Frontz Drilling

logist : Amanda Trenton

Oversight Company : SAIC
Borehole Diameter : 2"

Sampling Equipment : 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266 Portage County

 Start Date
 : 03/22/10; 0910

 End Date
 : 03/22/10; 1005

 Northing Coord.
 : 557475.7402

 Easting Coord.
 : 2351867.0397

 Total Depth of Boring
 : 13.0 ft

			1 ortage county	Total Deptil of Boiling . 13.0	0 11			
Depth in feet	USCS Symbol	USCS Graphic	Descriptio	on	Analyses	Recovery	Collection Interval	Comments
0-	ML	Щ	(0.0' - 0.25') SILT (ML); 10YR4/2 d					Soil Color Chart
1-			loose; wet from rain; organics throu (0.25' - 3.8') CLAY (CL); some Silt; grained Sand; 10YR5/6 yellowish b and 10YR5/3 brown; soft; damp; m	little fine to medium brown, 2.5Y6/1 gray,	LL11sb-065-5573-SO collected from 0.0' - 1.0' c 03/22/10 at 0925 for TAL Metals + Hg, PCBs, PAHs			Munsell 2000 Rev. Ed.
2-	CL		(1.5 - 3.8') Medium stiff. Siltier with depth.		and Explosives. LL11sb-065-5574-SO			
3-					collected from 1.0' - 4.0' o 03/22/10 at 0935 for TAL Metals + Hg, PCBs, PAHs and Explosives.	2.0,0.0		
5— 6— 7—	ML		(3.8' - 12.8') SILT (ML); some fine glittle Clay; little Gravel, <1/2", subayellowish brown and 2.5Y6/1 gray;	ngular; 10YR5/4	LL11sb-065-5575-SO collected from 4.0' - 7.0' c 03/22/10 at 0954 for TAL Metals + Hg, PCBs, PAHs and Explosives.	2.55'/3.0'		
8-					LL11sb-065-5576-SO collected from 7.0' - 13.0'	2.25'/3.0'		
10-	sw		(9.8' - 12.8') Medium grained SANI 10YR5/4 yellowish brown; medium		03/22/10 at 1004 for TAL Metals + Hg, PCBs, PAHs and Explosives.			
- 13-	ML	Ш	(12.8' - 13.0') SILT (ML); little Sand gray; medium stiff; damp; low plast	l; trace Clay; 2.5Y5/1 ticity.				
			Boring terminated at 13.0 ft bgs.					Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.

		DISTRICT			BOREHOLE NUMBER			
HTRW DRILLING LOG			- Louisville	LUISB-0	LUISB-066			
1, COMPANY NAME		2. DRILLIN	G SUBCONTRACTOR			$\overline{}$		
SAIC	88	Frontz [Drilling		SHEET 1 OF	2		
3. PROJECTICUATE	IP PPA 08 RI				e 5 Ravenna, OH 442	266		
NAME OF DRILLER TEREMY UZULONE			6. MAKE/MODEL OF DRILL Geoprobe UUZØ					
SIZES AND TYPES OF SAMPLIN	G EQUIPMENT		9. SURFACE ELEVATION	557856 806	2/6-235166	1.17		
K O XI	HAND HOOR			STARTED: 1045	COMPLETED: 1145	of the same		
15	HAND AUGOR I ALETATE UNDR I DUAL TUBE		10. DRILLI DATE/TIME 15. DEPTH GROUNDW	1010	FT			
S. X.	1 DUAL TUBE		16, DEPTH TO WATER	ELAPSED TIME AFTER BORE				
OVERBURDEN THICKNESS	13+FT			NA	No.			
DEPTH DRILLED INTO BEDRO	IVA		17. OTHER WATER LEV	/EL MEASUREMENTS (INLCLI	JDE DATE/TIME)			
OTAL DEPTH OF BOREHOLE SEOTECHNICAL SAMPLES	13+7		- 1 - 0	19. TOTAL NUMBER OF CO	DE BOYES ALA			
HEMICAL SAMPLES	UNDISTURBED: NA	DISTURBE	OTHER:	(10)	RE BOXES NA AL CORE RECOVERY % NA	_		
ISPOSITION OF BOREHOLE	DATE STARTED/INSTALLED (E COMPLETED/ABANDONED		7_		
KFILL TYPE: GR	_		PORARY WELL POINT	☐ MONITORING				
OTES BKG: ≤ Backgr	round BGS: Below Ground Su	ırface	CPM: Counts per Min	ute PPM: Parts p	er Million			
: First W	/ater Encountered	: Static Water L	evel NA:	Not Applicable				
CATION SKETCH/CO	MMENTS			SCALE:	None			
		1 1			4 4 4 4 4			
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QGIST SIGNATURE/DATE		DAVQC ŞIGNATUR			BOREHOLÉ NUMBER			





: 03/22/10; 1045

Type of Drill Rig

Driller

Drilling Company : Frontz Drilling : Jeremy Leckrone Designation of Drill : Geoprobe 6620DT : Direct Push Technology

Geologist : Amanda Trenton

Oversight Company : SAIC **Borehole Diameter**

Sampling Equipment : 1.5" x 4' Long Acetate Liner

> : 2" x 4' Dual Tube : 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266 Portage County

End Date : 03/22/10; 1145 Northing Coord. : 557856.8662 Easting Coord. : 2351664.1276 Total Depth of Boring : 13.0 ft

Start Date

Collection Interval Graphic Symbol Depth in feet Recovery USCS (**USCS Analyses** Description Comments 0 (0.0' - 2.8') CLAY (CL); some Silt; little Sand; 10YR4/3 Soil Color Chart Munsell 2000 Rev. Ed. brown, 10YR5/6 yellowish brown, and 2.5Y6/3 light 1.0'/1.0' LL11sb-066-5577-SO yellowish brown; soft; wet from rain; medium plasticity; collected from 0.0' - 1.0' on (1.2' - 2.8') Stiff. 03/22/10 at 1100 for TAL Metals + Hg, PCBs, PAHs, CL and Explosives. 2 LL11sb-066-5578-SO collected from 1.0' - 4.0' on 2.4'/3.0' 03/22/10 at 1125 for TAL (2.8' - 5.7') SILT (ML); little Clay; little fine grained Sand; 3 Metals + Hg, PCBs, PAHs, little Gravel, < 1/2", subangular; 10YR4/3 brown; medium and Explosives. stiff; dry; low plasticity. 4 ML LL11sb-066-5579-SO 5 collected from 4.0' - 7.0' on 03/22/10 at 1130 for TAL 2.7'/3.0' Metals + Hg, PCBs, PAHs, (5.7' - 9.0') Fine grained SAND and SILT (SM); little Clay; and Explosives. trace Gravel, <1/2", subangular; 10YR5/6 yellowish brown, 2.5Y6/1 gray, and 5Y5/3 olive; damp; silt content decreases with depth. SM 8 1.9'/3.0' (9.0' - 12.0') GRAVEL and SAND (GP); subrounded, 1/4" Gravel coarsening downward to subangular, 1/2" LL11sb-066-5580-SO Gravel; some Silt lenses; 10YR4/4 dark yellowish brown; collected from 7.0' - 13.0' on 10 medium dense; wet; nonplastic. 03/22/10 at 1139 for TAL Metals + Hg, PCBs, PAHs, GP| and Explosives. 11 2.5'/3.0' 12 (12.0' - 13.0') Fine to medium grained SAND (SW); 10YR4/4 dark yellowish brown, some 2.5Y6/1 gray; SW medium dense; wet. 13 Boring terminated at 13.0 ft bgs. Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.

Samples were composited and homogenized for all analyses.

		DISTRICT			BOREHOLE NUMBER	
HTRW DRILLING		E - Louisville		LLISB00	17	
1. COMPANY NAME		2. DRILLIN	IG SUBCONTRACTOR		1010000	
SAIC		Frontz	Drilling		SHEET 1 OF	2
3. PROJECT RUAMP	PBA OS RE		4. LOCATION R	VAAP 8451 State Rout	te 5 Ravenna, OH 44266	 6
5. NAME OF DRILLER JEREM	1 LECTRONE		6. MAKE/MODEL OF D	Geoprobe Geoprobe		
7. SIZES AND TYPES OF SAMPLING E			8. BOREHOLE LOCAT		0197 6-2352819	7, Sk
3 × 1 114	NO AUGER		9. SURFACE ELEVATI	UNDATUM NAO 83		
1.5" × 4! Ace			10. DRILL DATETIME	STARTED: 0800	COMPLETED: Ø9 🖤)
2" y y' Duf	r tube			VATER ENCOUNTERED 9	2 FT	
12. OVERBURDEN THICKNESS	> 13+1		-	NA	11012 00Mil 22 11014	
13. DEPTH DRILLED INTO BEDROCK	NA NA		17. OTHER WATER LE	VEL MEASUREMENTS (INLCL	UDE DATE/TIME)	
14. TOTAL DEPTH OF BOREHOLE	137		-	MA		
18. GEOTECHNICAL SAMPLES	UNDISTURBED:	DISTURBE	D:	19. TOTAL NUMBER OF CO	PRE BOXES NA	
20. CHEMICAL SAMPLES	CHEM: MET/EXP/PAH RABAD:	NA	OTHER:	21. TOTA	AL CORE RECOVERY % NA	
22. DISPOSITION OF BOREHOLE	DATE STARTED/INSTALLED:			TE COMPLETED/ABANDONED:	03/18/10;0900	,
BACKFILL TYPE: GROUT 23. NOTES PKG: C Backgroup			PORARY WELL POINT	MONITORING \	WELL	
BRG. S Background	_		CPM: Counts per Mi	·	er Million	
: First Water	Encountered : 8	Static Water L	_evel NA	: Not Applicable		
LOCATION SKETCH/COMM	ENTS			SCALE:	None	
	Ropa	OLL n= dr+i	1130-067	nw000		
EOLOGIST SIGNATURE/DATE	loar.	OC SIGNATURE				
amanda Su	enton OSIS/10	OC SIGNATURE		- lala	BOREHOLE NUMBER	,
NYY WAT WHE SU	My Collection	1	/) \	שאן/גיו	LU153-06	1





1sb-067 : 03/18/10; 0800 Designation of Drill Type of Drill Rig Geologist

Drilling Company

Driller

: Jeremy Leckrone : Geoprobe 6620DT : Direct Push Technology

: Frontz Drilling

Geologist : Amanda Trenton
Oversight Company : SAIC

Borehole Diameter : 2
Sampling Equipment : 1

: 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266 Portage County

 Start Date
 : 03/18/10; 0800

 End Date
 : 03/18/10; 0900

 Northing Coord.
 : 558449.0197

 Easting Coord.
 : 2352819.88

 Total Depth of Boring
 : 13.0 ft

			<u> </u>				
Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0-	CL		(0.0' - 1.4') CLAY (CL); some Silt; little/trace 1/4" - 1/2" Gravel; 10YR4/3 brown; soft; damp; low plasticity; fine roots and organics throughout.	LL11sb-067-5581-SO collected from 0.0' - 1.0' on 03/18/10 at 0820 for TAL	1.0'/1.0'		Soil Color Chart Munsell 2000 Rev. Ed.
2-	ML		(1.4' - 3.2') SILT (ML); little Clay and very fine grained Sand; 10YR5/4 yellowish brown; soft; damp, moist in sandier lenses; low plasticity.	Metals + Hg, PCBs, PAHs, and Explosives. LL11sb-067-5582-SO, LL11sb-067-6186-FD, & LL11sb-067-6190-QA collected from 1.0' - 4.0' on	A 2.1'/3.0' B 3.0'/3.0'		
4-	CL		(3.2' - 5.3') CLAY (CL); some Silt; trace Gravel, 1/2", subangular; 10YR5/6 yellowish brown and 5Y7/1 light gray; stiff; low plasticity.	03/18/10 at 0858 for TAL Metals + Hg, PCBs, PAHs, and Explosives.			
6-	SM		(5.3' - 6.5') Very fine grained SAND (SM); some Silt; 10YR5/4 yellowish brown, 7.5Y5/6 strong brown, and 5Y7/1 light gray; dry; loose to medium dense; nonplastic.	LL11sb-067-5583-SO collected from 4.0' - 7.0' on 03/18/10 at 0850 for TAL Metals + Hg, PCBs, PAHs, and Explosives.	2.9'/3.0'		
7-	sw		(6.5' - 8.1') Fine grained SAND (SW); little very fine grained Sand; trace Silt; 10YR4/6 dark yellowish brown; loose to medium dense; dry; nonplastic.				
9-	ML		(8.1' - 9.2') SILT (ML); little very fine grained Sand; trace Sandstone, 1/2"; 10YR4/6 dark yellowish brown; medium stiff; damp.		2.45'/3.0'		
10-	SW		(9.2' - 10.3') Medium grained SAND (SW); little Silt; 10YR4/6 dark yellowish brown some 10YR5/4 yellowish brown; wet.	LL11sb-067-5584-SO collected from 7.0' - 13.0' on 03/18/10 at 0914 for TAL Metals + Hg, PCBs, PAHs,			
11-	ML		(10.3' - 12.1') SILT (ML); little very fine grained Sand; trace Sandstone, 1/2"; 10YR4/6 dark yellowish brown; medium stiff; damp. (10.85' - 11.0') Sandstone fragments. (11.5' - 11.7') Sandstone fragments.	and Explosives.	2.6'/3.0'		
13-	ML		(12.1' - 13.0') SILT (ML); little Sand; trace Clay; 5Y5/2 olive gray; medium stiff; damp; low plasticity.				
			Boring terminated at 13.0 ft bgs.				Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
Samples were composited and homogenized for all analyses.
Twin boreholes were drilled to obtain volume required for analyses.

HTRW DRILLING LOG	DISTRICT	1		BOREHOLE NUMBER
	USACI	E - Louisville		L4153-068
1. COMPANY NAME		ING SUBCONTRACTOR		
SAIC	Frontz	Drilling		SHEET 1 OF 2
3. PROJECT KUMMY PEM (D.S. BI			8451 State Route	5 Ravenna, OH 44266
NAME OF DRILLER JEBERNY LECKBONE		6. MAKE/MODEL OF DRILL	Geoprobe	0(020) DT
SIZES AND TYPES OF SAMPLING EQUIPMENT		8. BOREHOLE LOCATION N -	558 552,30	M E-2352812.75
3" y 1" HAND HUGER		9. SURFACE ELEVATION/DATU	MUM083	
1,5" x 4" ACETATE CINTER	-	10. DAIL PATETIME STAR	(0)	COMPLETED: 1040
2" × 4" DUAL TURE		15. DEPTH GROUNDWATER ET	I.	5'
2. OVERBURDEN THICKNESS >13+T		- CONTRACTOR OF THE PROPERTY OF	MH	DLE COMPLETION
3. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVEL MEA		E DATE/T(ME)
4. TOTAL DEPTH OF BOREHOLE >13+T			MA	,
8. GEOTECHNICAL SAMPLES UNDISTURBED:	DISTURBE	ED: 19. TC	TAL NUMBER OF CORE	BOXES NA
O. CHEMICAL SAMPLES CHEM: FULSUITE RAD	: NA	OTHER:	21. TOTAL (CORE RECOVERY % NA
2. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED:	03/18/10/	, 0920 DATE COMP	LETED/ABANDONED()	3/18/10;1040
ACKFILL TYPE: GROUT BENTONITE 3. NOTES BYC C BOLLY DIVING BOOK BY BY BOOK BY		MPORARY WELL POINT	MONITORING WE	
BGS: Below Ground 8	_	CPM: Counts per Minute	PPM: Parts per f	Million
: First Water Encountered	: Static Water I	Level NA: Not App	plicable	
OCATION SKETCH/COMMENTS			SCALE:	None
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	(X)	LIISD OU7	dy	
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RVAAP-44 Load Line 11 LL11sb-068

Driller
Designation of Drill
Type of Drill Rig

Drilling Company

: Frontz Drilling : Jeremy Leckrone : Geoprobe 6620DT : Direct Push Technology

Geologist
Oversight Company

: Amanda Trenton

: SAIC

Start Date : 03/18/10; 0920 End Date : 03/18/10; 1040 Northing Coord. : 558552.3077

Borehole Diameter Sampling Equipment

: 1.5" x 4' Long Acetate Liner : 2" x 4' Dual Tube

Easting Coord. : 2352812.7580 Total Depth of Boring : 13.0 ft

: 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0 — - - 1 — - 2 —	CL		(0.0' - 1.5') CLAY (CL); some Silt; little 1/4" - 2" Gravel; 10YR4/3 brown; soft; damp; medium plasticity; roots and organics throughout. (1.5' - 2.7') SILT (ML); trace Clay and 1/2" Gravel; 10YR4/4 dark yellowish brown; soft; damp; medium plasticity.	LL11sb-068-5585-SO collected from 0.0' - 1.0' on 03/18/10 at 0935 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg.	1.0'/1.0'		Soil Color Chart Munsell 2000 Rev. Ed.
3-	ML ML		(2.7' - 3.25') SILT (ML); some Gravel and coarse Sand; dark red brown and 10YR5/6 yellowish brown; loose; crumbly; dry. (3.25' - 4.3') SILT (ML); some very fine grained Sand; little Clay; 10YR5/6 yellowish brown; soft; damp; medium plasticity.	LL11sb-068-5586-SO and MS/MSD collected from 1.0' - 4.0' on 03/18/10 at 1010 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg.	A 1.9'/3.0' B 2.6'/4.0'		
5— 5— 6— 6—			(4.4' - 10.5') Medium to fine grained SAND (SW); 7.5YR4/6 strong brown; loose; damp to moist; nonplastic. (6.6' - 6.8') Clayey Sand; 5Y7/1 light gray. (7.5' - 10.0') Wet. Fining downward.	LL11sb-068-5587-SO, LL11sb-068-6187-FD, & LL11sb-068-6191-QA collected from 4.0' - 7.0' on 03/18/10 at 1015 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hq.	A 2.6'/3.0' B 2.4'/3.0' C 2.2'/3.0' D 2.0'/3.0'		
8	SW			LL11sb-068-5588-SO collected from 7.0' - 13.0' on 03/18/10 at 1035 for VOCs, SVOCs, PCBs, Pesticides,	2.55'/3.0'		
11-	SM		(10.5' - 12.6') SILT and very fine grained SAND (SM); 10YR4/6 dark yellowish brown; medium dense; wet; nonplastic. (12.6' - 13.0') SILT (ML); little Sand; 2.5Y5/1 gray; medium	Explosives, Propellants, and TAL Metals + Hg.	3.0'/3.0'		
13-	ML		dense; wet; low plasticity. Boring terminated at 13.0 ft bgs.				Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.

0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses except VOCs. Twin boreholes were drilled to obtain volume required for analyses.

LL11sb-068

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SAIC FRONTE PUMPIN PAH DS RT ALGORITON BY ALAP 8451 State Route Revening, OH 44286 INMERIOR OF PRILLE TO SOUTH VERY LET VEND RE SEES AND TYPE OF SOUTH DE COMMENT 3" X 1" HAND AVGEX SOUTH DEPTH OF SOUTH DE COMMENT 10 SUPPLE REVENING COMMENT 10 SUPPLE REVENING COMMENT 10 SUPPLE REVENING COMMENT 10 DEPTH ORDINON THE REVENING COMMENT 10 DEPTH ORDINON THE REVENING COMPLETED FUH DE 10 DEPTH ORDINON THE REVENING COMPLETED FUH DE 10 DEPTH ORDINON THE REVENING COMPLETED FUH DE 11 DEPTH ORDINON THE REVENING COMPLETED FUH DE 12 OVERBURDEN THOMESS 13 DEPTH ORDINON THE REVENING COMPLETED FUH DE 14 DEPTH ORDINON THE REVENING COMPLETED FUH DE 15 DEPTH ORDINON THE REVENING COMPLETED FUH DE 16 DEPTH ORDINON THE REVENING COMPLETED FUH DE 17 OTHER WATER LEVEL MESS PROBENING FOR CORE BOOKS NA 17 OTHER WATER LEVEL MESS PROBENING FOR CORE BOOKS NA 18 DEPTH ORDINON THE REVENING COMPLETED FUH DE 20 DEPTH ORDINON THE REVENING COMPLETED FUH DE 21 DEPTH ORDINON THE REVENING COMPLETED FUH DE 22 DEPTH ORDINON THE REVENING COMPLETED FUH DE 23 DEPTH ORDINON THE REVENING COMPLETED FUH DE 24 DEPTH ORDINON THE REVENING COMPLETED FUH DE 25 DEPTH ORDINON THE REVENING COMPLETED FUH DE 26 DEPTH ORDINON THE REVENING COMPLETED FUH DE 27 FIRST WIRE EDOCUMENTS 10 DEPTH ORDINON THE REVENING COMPLETED FUH DE 28 DEPTH ORDINON THE REVENING COMPLETED FUH DE 29 DEPTH ORDINON THE REVENING COMPLETED FUH DE 20 DEPTH ORDING COMPLETED FUH DE 21 DEPTH ORDINON THE REVENING COMPLETED FUH DE 21 DEPTH ORDINON THE R	HTRW DRILLING LOG	USACE	CE - Louisville LL/1/56-06			
SAIC 3. PROJECT KLAMP PICH OS BT 4. LOCATION RVAAP 8451 State Roule 5. Ravenina, OH 44268 1. NAME OF DRILLER 3. VAIN HAND AVGEX 8. BORBIOLE COLOR SY 7912, 7467 C 233 7400, 9247, 8. SURFACE ELEVATIONSOFTEM MAP BY 2. 233 7400, 9247, 8. SURFACE ELEVATIONSOFTEM MAP BY 3. SURFACE ELEVATIONSOFTEM MAP BY 3. DEPTH YO WATER ELEVATIONSOFTEM BY 3. DEPTH YO WATER ELEVATIONSOFTEM MAP BY 3. DEPTH YOU WATER ELEVATIONSOFTEM MAP BY 3	1, COMPANY NAME	2, DRILLIN	G SUBCONTRACTOR	0.4557		
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COMPRESS 1	3" x 1" HAND AUGER		9. SURFACE ELEVATION/DATUM NAI) 83			
SOUR PROUNDED THICKNESS 5 + 1	O XI MINOS MOGRE		10. DRILL DATE/TIME STARTED:			
2 OVERBURDEN THICKNESS 5 + 1			15. DEPTH GROUNDWATER ENCOL			
3. DEPTH DRILLED INTO BEDROCK NA 17. OTHER WATER LEVEL MEASUREMENTS (INLICLIDE DATETTINE) A. TOTAL COPPTH OF BORRIOLE D. T. OTHER WATER LEVEL MEASUREMENTS (INLICLIDE DATETTINE) A. TOTAL COPPTH OF BORRIOLE D. DEPTH DRILLED INTO BEDROCK O. CHEMCAL SAMPLES O. DATE STATE DINISTALLED (12) 22/10; 13-25-0. DATE STATE DINISTALLED (13) 22/10; 1			16. DEPTH TO WATER/ELAPSED TIN	ME AFTER BOREHOLE COMPLETION		
10. OPEN NOT BERNOXE NA 17. OTHER WATER LEVEL MEASUREMENTS INACLUDE DATETIME) 10. GEOFIECHMICKL SAMPLES UNDISTURBED: NA 19. TOTAL NUMBER OF CORE BOXES NA 19. TOTAL CORE RECOVERY % APPLICATE OF CORE BOXES NA 19. TOTAL CORE RECOVERY % APPLICATION OF BORBHOLE DATE STRATEGUNISTRALED (£2) 22.10(2) 19.25(0) DATE COMPLETEIDABNORED. (9.) 222.10(2) DATE COMPLETEIDABNORED. (9.) 222.10(2) DATE COMPLETEIDABNORED. (9.) 22	12. OVERBURDEN THICKNESS 5+ TT		- 140	LA-		
B. GEOTECHNICAL SAMPLES UNDISTURBED: A DISTURBED: NA PIO TOTAL NUMBER OF CORE BOXES NA 0. CHEMCAL SAMPLES CHEMCAL JUNE ON THE PION OF BORD OF THE PION OF THE P	the second secon		17. OTHER WATER LEVEL MEASUR	ÉMENTS (INLCLUDE DATE/TIME)		
DISCUSSIVE SAMPLES UNDITURBED: NA OSTURBED: NA OSTURBE	14. TOTAL DEPTH OF BOREHOLE	100		M9		
O. CHEMCAL SAMPLES CHEMCAL JUNE CHEMCAL SAMPLES CHEMCAL JUNE CHEMCAL SAMPLES CHEMCAL SAMPLES		DISTURBE	D: MA 19. TOTAL	1474		
DATE STATEDINISTALLED: (D3.) 22/10; 133-0 DATE COMPLETEDIABANDONED: (D3.) 22/10; 1440 ACKRILL TYPE: GROUT				21. TOTAL CORE RECOVERY %		
ACKPILL TYPE.			330 DATE COMPLETE			
SCALE: None OCATION SKETCH/COMMENTS SCALE: None We stalic Water Level NA: Not Applicable UMTRIC IS MY FT DEEP IN CENTURE UF DITCH CLOSED P CLOSED Troping Troping COOGIST SIGNATUREDATE OAGS SIGNATUREDATE						
SCALE: None WATEL IS 12 FT DEEP IN CENTER O P TOUS FIGURE DACE SIGNATUREDATE BORRENDLE NUMBER	23. NOTES BKG: ≤ Background BGS: Below Ground S	Surface	CPM: Counts per Minute	PPM: Parts per Million		
WATER IS 12 FT DEER IN CENTER UP DITCH CONSTRUCTOR CURBON TO THE DITCH COLOGIST SIGNATUREDATE COLOGIST SIGNATURED	: First Water Encountered	: Static Water I	evel NA: Not Applica	ble		
WATER IS 12 FT DEER IN CENTER UP DITCH CONSTRUCTOR CURBON TO THE DITCH COLOGIST SIGNATUREDATE COLOGIST SIGNATURED	LOOATION SECTION CONTINUES		" T = " T V	COLLEGE III		
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amanda nenton 03/2/10 KC) > 5/13/10 LL115B-069	GEOLOGIST SIGNATURE/DATE	OAOC SIGNATU	PEOATE ,	BOREHOLE NUMBER		
Orthorna Tollow College Colleg	amanda Venton 02/20/10	KE	1) 5/13/16	LL115B-009		
	CHILITANA TOTAL GOLOTTO		- 117			





RVAAP-44 Load Line 11 LL11sb-069

Driller : Jeremy Leckrone
Designation of Drill : NA

Drilling Company

Type of Drill Rig : NA
Geologist : Amanda

Geologist : Amanda Trenton

: Frontz Drilling

Oversight Company : SAIC
Borehole Diameter : 3"

RVAAP PBA 2008 Remedial Investigation Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266 Portage County

 Start Date
 : 03/22/10; 1330

 End Date
 : 03/22/10; 1440

 Northing Coord.
 : 557992.3609

 Easting Coord.
 : 2353600.9242

Total Depth of Boring : 5.0 ft

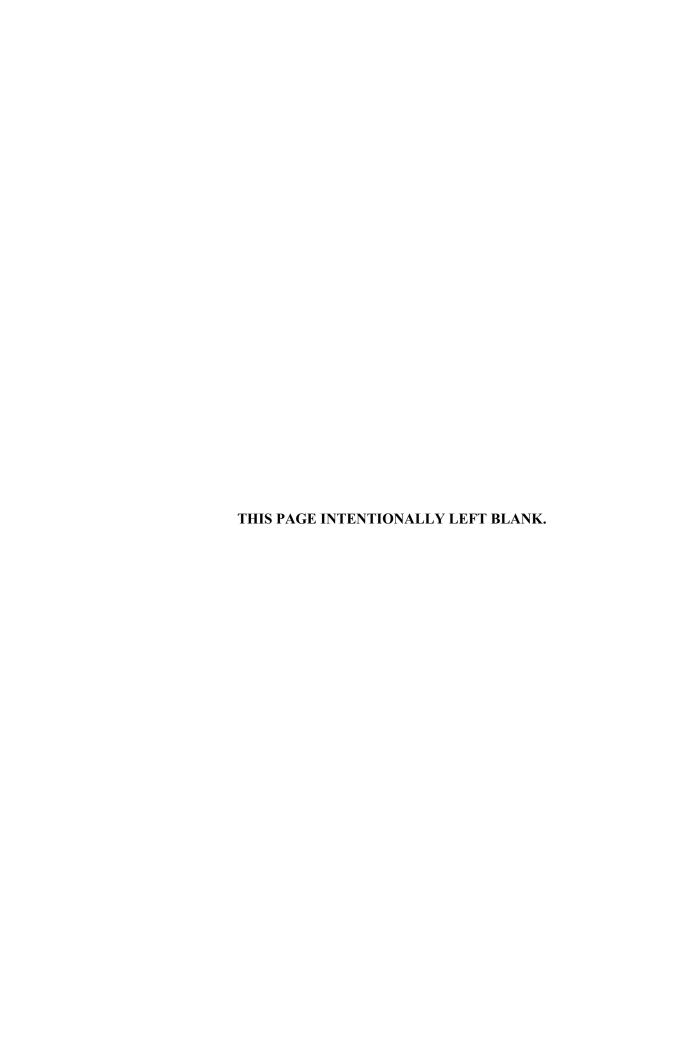
ord. : 557992.3609 Sampling Equipment : 3" Hand Auger

			Portage County	Total Depth of Boring : 5.0	ft			
Depth in feet	USCS Symbol	USCS Graphic	Descriptio	on	Analyses	Recovery	Collection Interval	Comments
0-	ML		(0.0' - 0.5') SILT (ML); 10YR3/2 ver soft; wet from water flowing in ditch organics throughout. (0.5' - 1.0') CLAY (CL); some Silt; s grained Sand; 10YR4/3 brown, 7.5	ome fine to medium YR6/8 reddish yellow,	LL11sb-069-5589-SO collected from 0.0' - 1.0' o 03/22/10 at 1350 for TAL Metals + Hg, PCBs, PAHs and Explosives.	1 0'/1 0'		Soil Color Chart Munsell 2000 Rev. Ed.
1-	-		and 2.5Y6/1 gray; damp to wet from (1.0' - 4.0') SILT and SAND (SM); li subrounded to subangular; 2.5Y5/3 10YR5/6 yellowish brown; medium	ttle Gravel 1/2" - 3.0" 3 light olive brown and				
2-	SM				LL11sb-069-5590-SO collected from 1.0' - 4.0' o 03/22/10 at 1404 for TAL Metals + Hg, PCBs, PAHs and Explosives.	2 01/2 01		
4-	- - - - - - - -		(4.0' - 5.0') SILT (ML); some Clay; I	ittle fine grained Sand,				
- 5-	ML		mostly in lenses;10YR5/3 brown; si surface water; high plasticity; clay owith depth.	tiff; damp from content increases	LL11sb-069-5591-SO collected from 4.0' - 5.0' o 03/22/10 at 1428 for TAL Metals + Hg, PCBs, PAHs and Explosives.	1 0'/1 0'		
			Boring terminated at 5.0 ft bgs. Har	nd auger refusal.				Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.

LL11sb-069





RVAA PBA08 RI - Surface Water	USACE - Louisville	RVAAP 8451 State Rt. 5
and Wet Sediment Sample Log	2, PROJECT: RVAAP PBA 2008 RI	Ravenna, OH 44266
. COMPANY NAME: SAIC	3 Sample Team Mive Denallo	SHEET 1 OF 12
	Emily Cunningham	SILET 1 OF 1d
Surface Water Equipment Used: NA	5. Cordinates Recorded: JAA	
Sample ID and Time	SAMPLE TYPE: CLAS 7. Dupe ID (if needed)	
LLIISW-082-5408-SW; W	3 p	_
MS/MSD ID (if needed)	9. Split ID (if needed)	
Wet Sediment Equipment Used: Hand Rush Probe	SAMPLE TYPE: CON DOST 16	VOCs - Grabe Comp
LLISD-682-5593-SD; 143	the second secon	
MS/MSD ID (if needed)	14. Split ID (if needed)	
eather Conditions: 329F, Snaw, Claudy	Activities in the Area	VE .
OCATION SKETCH/COMMENTS	SCALE:	None
ield Notes: Maved GPS location downs	stream to dotain the	
sample safely. New loc	ation was GRS & and 138. 47ft and Easting 335	
saved as Northing 3580	738 47 ft and Easting: 2368	1492.76fx
SEDIMENT: BILLY SMND (SC) Som darr broth yellowish brown in plastic; some organics (roots, I	o Grave I little clave	area was and a serious discount of the control of t
dark bratin yellowish brown is	OUP HIM I hope hor	
plastic, some organics (voots, i	eaves).	
samples taken at 10 rander	n pands s'away from	
samples taken at 10 randors sw sample location using her	nd push probe.	~ / /
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URFACE WATER 13		
NALYSES: EXPLOSIVES TAL METAL FULL SUITE (VOCs, SVOCs, Me	.S SVOCs NOTHER VOCS tals, Explosives, Propellants, Pesticides, PCBs)	100
VET SEDIMENT		
ANALYSES: X EXPLOSIVES X TAL METAL	S X SVOCs XOTHER W/S tals, Explosives, Propellants, Pesticides, PCBs)	
The 310		
	MP	2-24-10
Recorded By: And Complete of Complete Signature and Date of 22-24-26	QC Checked by:	_
(Signado ano Date) 6x-24-21	(Signature and Date	"

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PROJECT NAME: RVAAP PBA08 RI

PHOTOGRAPH ID(S): NA

PROJECT NO: 172819.00.09456.00.9200.02.200

SAMPLING LOCATION: 41/19W-082 DATE COLLECTED (MM/DD/YY): 42/16/16
TIME: 1235
SAMPLE TEAM: STEVE VISOCKY, SARA LILSE
WEATHER: SUNNY 450F ACTIVITIES IN AREA:
FIELD OBSERVATIONS (i.e. Water color, odor, flow): MODERATE FLOW, 4-6" DEEP AT SAMPLE LOCATION. SLIGHT GRAYISH
TINGE SMALL ROCKS AND SEDIMENT ON BOTTOM OF DITCH. SOME
ALGAE GROWTH.

FIELD MEASUREMENTS	READING	UNITS	SERIAL NO.	LAST CALIB.
TEMPERATURE:	5.94	°C	15560	d3/16/10
pH:	7.52	S.U		
CONDUCTIVITY:	0.075	mS/cm		
DO:	10.01	mg/L		
TURBIDITY:	9.33	NTU	15559	J
OTHER			\$/ Zi,UiO	

Recorded By: School QC Checked by: St. Vij 3/16/10 (Signature)

and Wet Sediment Sample Log	7. Dupe ID (if needed) SAMPLE TYPE: 505 SV Composite V(Xs Grab 12. Dupe ID (if needed) 14. Split ID (if needed) Activities in the Area SCALE: None SCALE: None SCALE: None SCALE: None The difth. Levery Schlip Levery Scale Scale Schlip Levery Scale Schlip Levery Scale Scale Schlip Levery Scale Schlip Levery Scale Scale Schlip Levery Scale Scale Scale Scale Schlip Levery Scale
1. COMPANY NAME: SAIC 1. LOCATION ID: LLII SW-083 + LLIS d-083 5. Surface Water Equipment Used: Swaple Battles (un proper B. Sample ID and Time LL 11 SW - 083 - 5609 - 5W 0927 1. MS/MSD ID (if needed) LL 11 SW - 083 - 5609 - MS/MSD 10. Wet Sediment Equipment Used: SK. Pyr Proba + 55 Bowl 11. Sample ID 12. Say - 50 LL 11 S & -083 - 5609 - MS/MSD 13. MS/MSD ID (if needed) MA Weather Conditions: Civercast 28 F Lisht Stone OCATION SKETCH/COMMENTS Field Notes: SILT (ML) . Little Clay, Trace S 11 9th Gray 104R 7/2 Saft, maist la organic material (DK. Grayith Brown 10 brown 1048 5/6 iron stainly r Very 10 flow surface water retockt SV re located collection point ziralio Need to re collect (PS point Theres was Lits Maising Theres was Lits Theres was Lits Theres was Lits Antiqued	5. Cordinates Recorded: S. ERDITION E. 235071201 SAMPLE TYPE: Grab ELEU GITU. GELA 7. Dupe ID (if needed) SAMPLE TYPE: Grab V (S. Grab 12. Dupe ID (if needed) 14. Split ID (if needed) Activities in the Area SCALE: None SCALE: None 14. Split ID, Yelloust Mode of the Content of the State of the
Surface Water Equipment Used: Surple Battles (un proper LL 115 W - 083 - 5609 - 5W 0927 MS/MSD ID (if needed) LL 115 W - 083 - 5609 - MS/MSD O. Wet Sediment Equipment Used: Sc. Pyc Probe + 55 fowl 1. Sample ID S594 - 5D LL 115 CL - 083 - 5609 - 50 LL 115 CL - 083 - 5609 - 50 MS/MSD ID (if needed) WA /eather Conditions: Overcast 28 F Light From OCATION SKETCH/COMMENTS leld Notes: SILT (ML), Little Clay, Trace s I 19th Grey + 048 - 7/2, Soft, moist, Lo Organic material (DK. Greyich Brown in brown 10425/6 iron stainly r Very 10w flow surface water relocks size in Need to be collect of spoint Size in Need to be collect of spoint There's waterises There's waterises ORIGINAL THERE'S	5. Cordinates Recorded: S. ERDITION E. 235071201 SAMPLE TYPE: Grab ELEU GITU. GELA 7. Dupe ID (if needed) SAMPLE TYPE: Grab V (S. Grab 12. Dupe ID (if needed) 14. Split ID (if needed) Activities in the Area SCALE: None SCALE: None 14. Split ID, Yelloust Mode of the Content of the State of the
Surface Water Equipment Used: Surple Bottle's Cumposer Sample ID and Time LL 115 W - 083 - 5609 - 5009 - 0927 MS/MSD ID (if needed) LL 115 W - 083 - 5609 - MS/MSD D. Wet Sediment Equipment Used: St. Py Probe + 55 powl I. Sample ID SS 9 4 - 5D LL 115 & -083 - 5609 - 500	SAMPLE TYPE: Grab 7. Dupe ID (if needed) SAMPLE TYPE: Grab V Composite V(Ys Grab 12. Dupe ID (if needed) 14. Split ID (if needed) Activities in the Area SCALE: None SCALE: None SCALE: None 14. Split ID, Yellowst Activities in the Area SCALE: None SCALE: None
Sample ID and Time LL IIS W - 083 - 5609 - 5W 0927 MS/MSD ID (if needed) LL II SW - 083 - 5609 - MS/MSD D. Wet Sediment Equipment Used: SS. Pus Prolis + 55 Pawl Sample ID SS 9 4 - 5D LL IIS CL - 083 - 5609 - SW 72/HS/D 1005 MS/MSD ID (if needed) MA Beather Conditions: Overcast 28 F Light Ital DCATION SKETCH/COMMENTS BILT (ML), Lift/2 Clay, Traces I 19th Gray 104R 7/2, Saft, maist, la organic material (DK. Grayish Brown 10 brown 1048 5/6 iron stainly or Very law flow surface water relaced SV re located collection point zixla Need to be collect (PS point MY Gravital Theres My LITE MY Gravital Theres My LITE MY Gravital Theres MY LITE MY MY MY MY MY MY MY MY MY M	SAMPLE TYPE: Grab 7. Dupe ID (if needed) SAMPLE TYPE: Grab V Composite V(Ys Grab 12. Dupe ID (if needed) 14. Split ID (if needed) Activities in the Area SCALE: None SCALE: None SCALE: None 14. Split ID, Yellowst Activities in the Area SCALE: None SCALE: None
Sample ID and Time LL IIS W - 083 - 5609 - 5W 0927 MS/MSD ID (if needed) LL II SW - 083 - 5609 - MS/MSD Wet Sediment Equipment Used: SS. Pus Prolis + 55 pawl Sample ID SS 9 4 - 5D LIIS CL - 083 - 5609 - 500 prolis + 55 pawl MS/MSD ID (if needed) MA DEATHOR SKETCH/COMMENTS Peld Notes: SILT (ML), Little Clay, Traces I 19th Gray 104R 7/2, Saft, maist, ca organic material (DK. Grayish Brown 10 brown 1048 5/6 iron stainly or Very law flow surface water relaced SV re located collection point zizsla Need to be collect (PS pain There Marijum There	7. Dupe ID (if needed) SAMPLE TYPE: 505 SV Composite V(Xs Grab 12. Dupe ID (if needed) 14. Split ID (if needed) Activities in the Area SCALE: None SCALE: None SCALE: None SCALE: None The difth. Levery Schlip Levery Scale Scale Schlip Levery Scale Schlip Levery Scale Scale Schlip Levery Scale Schlip Levery Scale Scale Schlip Levery Scale Scale Scale Scale Schlip Levery Scale
MS/MSD ID (if needed) LL 11 SW - 083 - 5609 - MS/MSD Wet Sediment Equipment Used: SS. Pyl Prolis + 55 powl Sample ID	SAMPLE TYPE: 6755 Composite V(Xs Grab 12. Dupe ID (if needed) 14. Split ID (if needed) Activities in the Area SCALE: None SCALE: None YR 4/2), Yelloubl M to ditth. (collected on 3/9/10)
Wet Sediment Equipment Used: 55. Push Prolis + 55 powl Sample ID 5594-5D LIIS CL-083-5609-5W 52/25/10 1005 MS/MSD ID (II needed) MA Bather Conditions: Overcast 28 F Light Tro- DCATION SKETCH/COMMENTS Peld Notes: SILT (ML), Little Clay, Traces I 19th Gray 1048 7/2, Saft, maist, ca Organic material (DK. Grayith Brown 10 brown 10485/6 iron staining or Very low flow surface water retocked SV relocated collection point ztasio Need to recollect (PS point Brown Staining or Description	SAMPLE TYPE: 6755 Composite V(Xs Grab 12. Dupe ID (if needed) 14. Split ID (if needed) Activities in the Area SCALE: None SCALE: None YR 4/2), Yelloubl M to ditth. (collected on 3/9/10)
Sample ID SS 9 4 - SD LIIS CL-083 - Stog-Sws 2/25/10 1005 MS/MSD ID (If needed) MA Bather Conditions: Overcast 28 F Light Tro- DCATION SKETCH/COMMENTS Beld Notes: SILT (ML), Little Clay, Trace S I 19th Gray 104R 7/2, Soft, moist, Lo Organic material (DK. Grayich Brown 10 Brown 10485/6 iron stainly r Very 10m flow surface mater retock SV re located callection point ztaslo Need to re collect (PS point Brown 10485/6 iron stainly r	SAMPLE TYPE: Graph V(1) Graph 12. Dupe ID (if needed) NA Activities in the Area SCALE: None SCALE: None Famul, Trace Gravely plasticity, 14. Yellaust Mode of the Graph Content of the Area Mode of the Gravely Collected of 3/9/10)
MS/MSD ID (II needed) WA Bather Conditions: Overcast 28 F Lisht Store DCATION SKETCH/COMMENTS Beld Notes: SILT (ML), Little Clay, Trace s 119th Gray 104R 7/2, Soft, moist, Lo Organic material (DK. Grayish Brown 10 Brown 10485/6 iron stownyr Very low flow surface water relockt all SV re located collection point zhalo Need to be collect (PS point Theres donn Little Brish	Activities in the Area Activities in the Area SCALE: None SCALE: None Frank, Trace Growly plasticity, 142, Yellowst Mto difth. L. (collected on 39100)
MS/MSD ID (II needed) WA Bather Conditions: Overcast 28 F Lisht Store DCATION SKETCH/COMMENTS Beld Notes: SILT (ML), Little Clay, Trace s 119th Gray 104R 7/2, Soft, moist, Lo Organic material (DK. Grayish Brown 10 Brown 10485/6 iron staining r Very low flow surface water relockt wilso re located collection point zhalio Need to be collect (PS point Theres day Little Bristy Theres day Little	Activities in the Area Activities in the Area SCALE: None SCALE: None Frank, Trace Growly plasticity, 142, Yellowst Mto difth. L. (collected on 39100)
eather Conditions: Overcast 28 F Light Store DCATION SKETCH/COMMENTS eld Notes: SILT (ML), Little Clay, Trace S I 19th Gray 104R 7/2, Saft, maist, La organic material (DK. Grayish Brown 10 brown 10485/6 iron staining or Very low flow surface water relocked all SV re located callection point zixla Need to be collect (PS point Theres was the second	Activities in the Area SCALE: None SCALE: None Fami, Trace Growl, plasticity, yra 4/2), Yellowst More SCALE: None SCALE: None Scale: None Scale: None Scale: None Scale: None
eld Notes: SILT (ML). Little Clay, Trace so light Gray 104R 7/2, Soft, moist co organic material (DK. Grayish Brown 10 brown 10425/6 iron staining r Very law flow surface mater relocks of SV relocated collection point zhallo Need to recollect (PS point Trees materials).	Activities in the Area SCALE: None SCALE: None Family, Trace Growly plasticity, 1472 4/12), Yellowsh At citth. L. (consecsed on 3/9/10)
eld Notes: SILT (ML). Little Clay, Trace so light Gray 104R 7/2, Soft, moist co organic material (DK. Grayish Brown 10 brown 10425/6 iron staining r Very law flow surface mater relocks of SV relocated collection point zhallo Need to recollect (PS point Trees materials).	SCALE: None SCALE: None SCALE: None SCALE: None SCALE: None
eld Notes: SILT (ML). Little Clay, Trace so light Gray 104R 7/2, Soft, moist co organic material (DK. Grayish Brown 10405/6 iron staining or Very law flow surface mater relocated so relocated collection point staining point staining or Need to be collect (PS points).	my the Gravely Aplanticity, And ditth. L. (contected on 319/10)
eld Notes: SILT (ML). Little Clay, Trace so light Gray 104R 7/2 Soft, moist la organic material (DK. Grayish Brown 10405/6 iron staining or Very low flow surface water relocked sor relocated collection point staining Need to be collect (PS point staining). Brown 10405/6 iron staining or Very low flow surface water relocked so recollect (PS point staining).	my the Gravely Aplanticity, And ditth. L. (contected on 319/10)
organic material (DK. Grayish Brown 10 brown 10425/6 iron staining r Very low flow surface mater relocks by relocated collection point zhale Need to recollect (PS point Brossy Bro	MAS 4/2), Yellowal MAS clifth. L. (consecrect on 3/9/10)
organic material (DK. Grayish Brown 10 brown 10425/6 iron staining r Very 10m flow surface mater relocks SV relocated collection point zhelio Need to recollect (PS point Bross Resident States and States	MAS 4/2), Yellowal MAS clifth. L. (consecrect on 3/9/10)
organic material (DK. Grayish Brown 10 brown 10425/6 iron staining r Very 10m flow surface mater relocated SV relocated collection point zhalin Need to recollect (PS point Brossy Brossy	MAS 4/2), Yellowal MAS clifth. L. (consecrect on 3/9/10)
organic material (DK. Grayish Brown 10 brown 10405/6 iron staining r Very low flow surface mater relocated sollection point zhallo Need to recollect (PS point Bross And LIIE)	Mto ditch. L. (consected on 3/9/10)
Very low flow surface water relocated collection point zhallo Need to recollect GPS point Trees Trees Trees Trees Trees	nto ditch. L. (consected or 3/9/10)
Very low flow surface water relocated collection point zhallo Need to recollect GPS point Brish Their Resident Their Residen	nto ditch. L. (consected or 3/9/10)
relocks of so relocated collection point zhalin Need to recollect GPS point Trees to the sound of the sound	4
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Jones Land	451-083 D193
and the state of t	
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URFACE WATER NALYSES: ☐ EXPLOSIVES ☐ TAL METALS ☐ ☐ FULL SUITE (VOCs, SVOCs, Metals, E:	SVOCs OTHER (closives, Propellants, Pesticides, PCBs)
VET SEDIMENT NALYSES: □ EXPLOSIVES □ TAL METALS □ Æ FULL SUITE (VOCs, SVOCs, Metals, Explosives)	SVOCs OTHER
Recorded By: St. 4 2/25/10 QC Che (Signature and Date)	plosives, Propellants, Pesticides, PCBs)

SAMPLE LOG SHEET

PROJECT NAME: RVAAP PBA08 RI PROJECT NO: 172819.00.09456.00.9200.02.200

SAMPLING LOCATION:	11.5w-Ø83	DATE COLLECTED (MM/DD/YY)	: 03/14/15

TIME: 1200

SAMPLE TEAM: <u>STOVE VISOCKY SALA HIS</u>

WEATHER: SUNNI, 45 F ACTIVITIES IN AREA: NONE

FIELD OBSERVATIONS (i.e. Water color, odor, flow....):

CLEAR, NO FLOW. ~2" DEEP. NO ODDE, LEAVES AND OTHER ORGANIC

DERRIS AND SEDIMENT ON BOTTOM OF DITCH.

PHOTOGRAPH ID(S): LL 11-SW OOL

FIELD MEASUREMENTS	READING	UNITS	SERIAL NO.	LAST CALIB.
TEMPERATURE:	8.41	°C	15560	93/16/14
pH:	7.24	S.U	1	1
CONDUCTIVITY:	9.317	mS/cm		
DO:	3.45	mg/L	1	
TURBIDITY:	3 20	NTU	15559	4
OTHER:		3/11/10		

Recorded By:

Signature) QC Checked by: St. Vinf 3/16/10 (Signature)

ann wer semmen samme on	USACE - Louisville 2. PROJECT: RVAAP PBA 2008 RI			RVAAP 8451 State Rt. 5 Ravenna, OH 44266			
and Wet Sediment Sample Log	3. Sample Team Emily Cunning him						
	5	terp Visocki	ru pa	SHEET 1 OF 12			
LLIISH-0844 LLIISW-084	LIISU-084 + LLIISW-084 5. Cordinates Recorded:						
5. Surface Water Equipment Used: Sumple Bottles (un se	arcent)	SAMPLE TYPE: Grab		Mar = 41			
3. Sample ID and Time LL IISW - OBY -56/0-5W	(i) 1 1 1	Dupe ID (if needed)					
B. MS/MSD ID (if needed)	0570	Split ID (if needed)					
MA	ľ	W.					
10. Wet Sediment Equipment Used: SS Push Page + SS Be	υl S	AMPLE TYPE: 6-5	V (00000	site voc-grab			
1. Sample IU	1	2. Dupe ID (if needed) 2.25	10	S VAC TYPES			
LL 115d-084-5595-5D	1112	NA					
3. MS/MSD ID (if needed)	11.	4. Split ID (if needed)					
Veather Conditions: Overcast, 28 F , Light Sho	1	Activities in the	Area Afor	0			
OCATION SKETCH/COMMENTS				NAM			
			SCALE:	None			
				100			
ield Notes: CML (Sr) and Class with	10.5	20 05 05 05 050	The state of the s	and the same of th			
Light Gray & Brown 1042 6/2, very moist, Low plasticity, organic man	ie sand,	Trace Fine Gravel	mm fomoless				
Light brown 1042 6/2, very	50++ - 50	4					
maist la alcalleite	1 1.	1 40 100225					
house her brather al	for (very	derkgry 10/2 3/1)	mm francisca				
yellowish Brown 10412 5/6 iron star	in he . Are.	it raste arcanic					
over.		J. 64313 1 45					
Flaming water							
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Flowing Cater				LL 11mw-610			
Flowing Oater	one of the state o			LL 11mw-610			
Flowing veter	Table 10 and 10			44.11mw-610			
Flowing veter				L-11mw-610			
Flowing veter				H-11mw-610			
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Flowing vater				H-11mw-610			
				Himw-60			
3-4-54				H 1 m w - 610			
	The state of the s	Garage Control of the		HIMW-610			
3 rush				Limw 60			
Brush				Limw-610			
3-4-5				Limw-60			
Brush Trees Lal		Garage Control of the		H 11mw - 610			
3 rust				HIMW-800			
Brush Tress Lal September 191							
3 rus		Brs		HIMW-80			
3 rust Surface water	d-084	Brs		Elmw-60			
SURFACE WATER ANALYSES: EXPLOSIVES TAL METAL	d-08/	Bros					
Brush Surface water	d-08/	Bros					
SURFACE WATER ANALYSES: EXPLOSIVES TAL METAL EXPLOSIVES TAL METAL EXPLOSIVES TO SURFACE WATER FULL SUITE (VOCs, SVOCs, Me	d − Ø8/ LS □ SVOC etals, Explosio	Ss OTHER ves, Propellants, Pesticide					
SURFACE WATER ANALYSES: EXPLOSIVES TAL METAL FULL SUITE (VOCs, SVOCs, Me WET SEDIMENT ANALYSES: EXPLOSIVES TAL METAL	LS SVOC	SS OTHER VOC	es, PCBs)				
SURFACE WATER ANALYSES: EXPLOSIVES TAL METAL FULL SUITE (VOCs, SVOCs, Me	LS SVOC	SS OTHER VOC	es, PCBs)				
SURFACE WATER ANALYSES: EXPLOSIVES TAL METAL FULL SUITE (VOCs, SVOCs, Me WET SEDIMENT ANALYSES: EXPLOSIVES TAL METAL FULL SUITE (VOCs, SVOCs, Me	LS SVOC etals, Explosive	S OTHER	s, PCBs)				
SURFACE WATER ANALYSES: EXPLOSIVES TAL METAL	LS SVOC etals, Explosive	S OTHER	s, PCBs)				

PG 2062

SAMPLE LOG SHEET

PROJECT NAME: RVAAP PBA08 RI PROJECT NO: 172819.00.09456.00.9200.02.200

SAMPLING LOCATION: 44115w- \$7	DATE COLLECTED (MM/DD/YY): d3/16/16
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TIME: /2/5

SAMPLE TEAM: STEVE VISOCKY, SARA HISE

WEATHER: SUMMY 4572 ACTIVITIES IN AREA: NONE

FIELD OBSERVATIONS (i.e. Water color, odor, flow....):

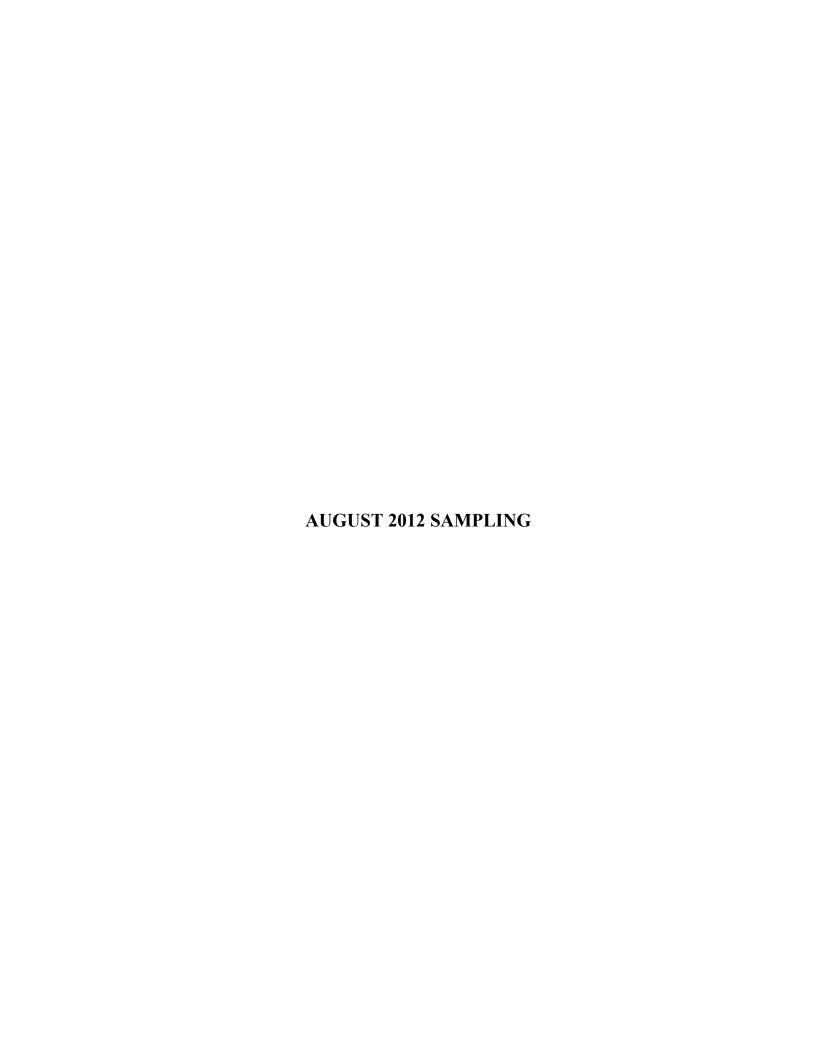
CLEAR WHITE SHEEN ON WATER MODERATE PLUW. DEPTH 5 ~3" DRGANIC DEBLIS ON BOTTOM OF DITCH. NO ODOR. SOME GREEN ALGRE CROWNA, SEDIMENT ON BUTTOM.

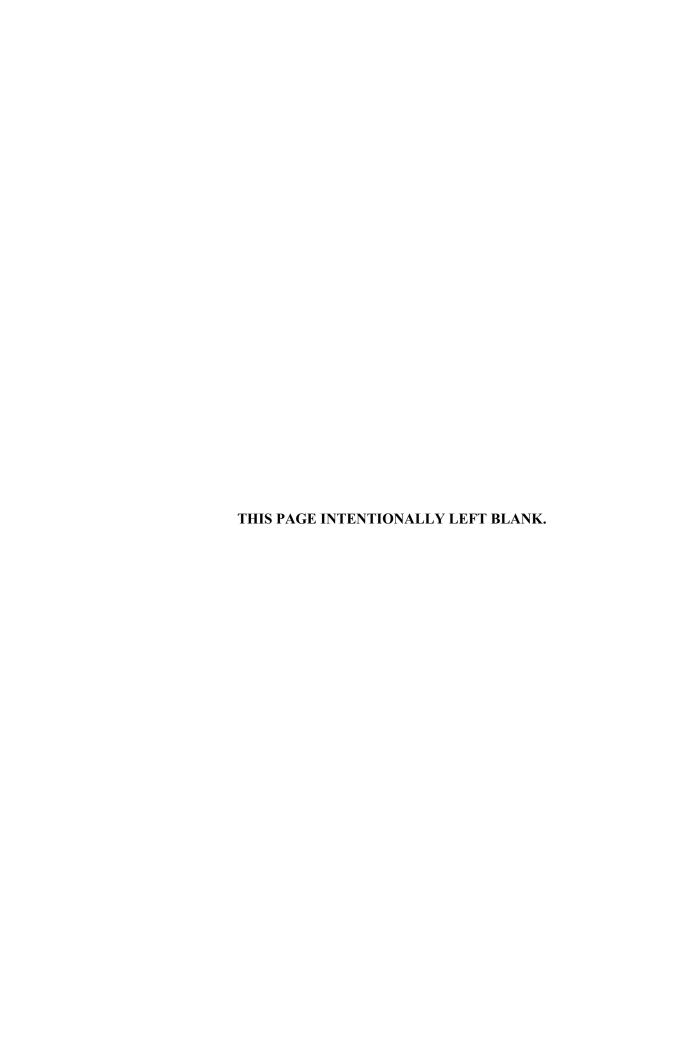
PHOTOGRAPH ID(S): LLII - SW-002

FIELD MEASUREMENTS	READING	UNITS	SERIAL NO.	LAST CALIB.		
TEMPERATURE:	7.39	°C	15564	03/16/14		
pH:	7.37	S.U	1			
CONDUCTIVITY:	Ø.192	mS/cm				
DO:	8.10	mg/L				
TURBIDITY:	8.20	NTU	15559			
OTHER			7			

Recorded By: Sally QC Checked by: Signature)

QC Checked by: Signature)





Location ID:		RVAAP - Surface Water & Wet Sediment Field Form SHEET 1 OF 1									
Location ID:	USACE - Louisville	ACE - Louisville		8451 State Rt. 5			KATIF WELLS				
Location ID:	RVAAP PBA 2008 RI	114741		a, OH 44266			ATITE WELLS				
	10701 1 117 2000 101		3	Revised C	oordinates Recor	MANOR	IRET	<u> </u>	<u>ر</u>		
LL 11SD-096				3. Revised Coordinates Recorded: N 41'11'19.90407" W: 81'06'23.74174							
. Surface Water Sample ID: UA				5. Date and Time:							
											Dupe ID (if needed):
A	1 = 1 = 1 + 1 = 1			JA-							
Surface Water Sample Type and	a Equipment Used: VA -	· DIT	CH IS	DRY 1. Date and	T			9. MS	/MSD:	NA	
. Wet Sediment Sample ID:	F001 C0						d				
_LII SD - 096 -	<u>-20 H-2D</u>		1:	3 Split ID (109/12 f needed)	; /32	φ				
WAY				MA	1100000						
. Wet Sediment Sample Type ar	nd Equipment Used: 2 / a	1 00	7711514	000	0 =			T		4 N/I	
Weather Conditions: 7014	5/8	. 72	PUSH	7 Activities	in the Area:	MAN]15. M	S/MSD:	M	
. Weather Conditions: 70'1	-; RAIN		1	7. Activities	ill life Alea.	DINE					
OCATION SKETCH/COM	MENTS					SCALE	: No	ne			
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FIELD MEASURE	MENTS REAL		UNITS	SER	IAL NO.		LAST	ALIE	3.		
TEMPERA	MENTS REAL		°C	SER	IAL NO.		LAST	CALIE	3.		
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	EMENTS REAL		°C S:U mS/cm	SER	1AL NO.	2	LAST	ALIE	3.		
TEMPERA	TURE:		°C S.U mS/cm mg/L	SER		2	LAST	ALIE	3.		
CONDUC	PH: TIVITY: DO: BIDITY:		°C S:U mS/cm	SER		2	LAST	CALIE	3.		

